



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

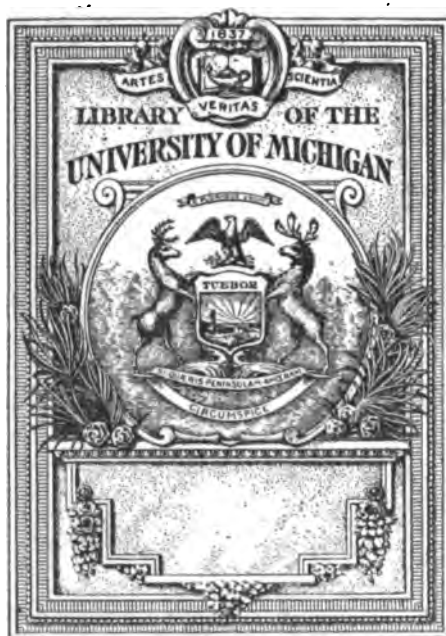
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





F
451
.K34



F
45/
.K34



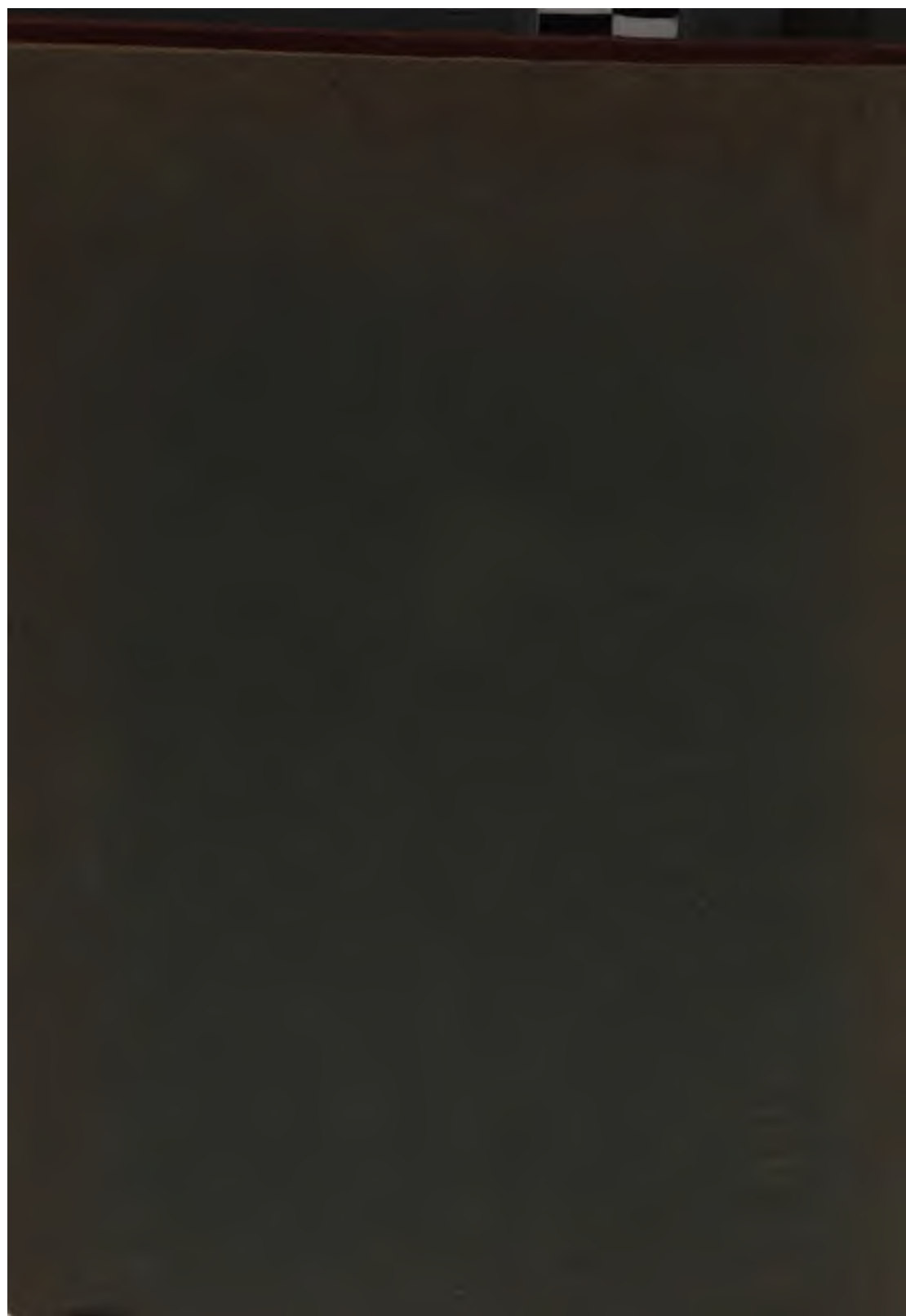
HAND BOOK
OF
KENTUCKY, *Bureau of Agriculture
Louisville, Ky.*



ISSUED BY
HUBERT VREELAND
Commissioner of Agriculture

LOUISVILLE, KY.:
THE GLOBE PRINTING CO.,
1908.





W9-12-1987

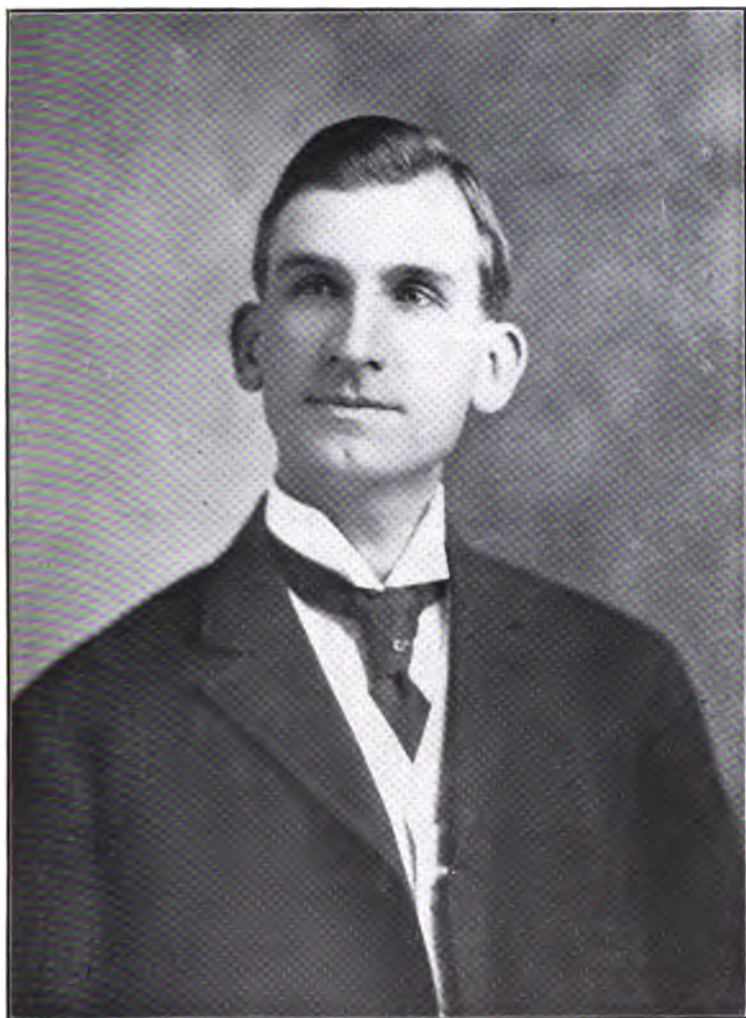
PREFACE.

his Handbook of Kentucky is issued from the office of the Commissioner of Agriculture, Labor and Statistics, Frankfort, Ky., to enable it to answer more fully and specifically than can be done in circulars or letters the many inquiries received from other States, and especially those lying to the north, northwest, and east of this State, as well as from foreign countries, as to the resources, climate, and general prospects for investments in the fertile lands, rich minerals, and abundant timber belts of his State.

I will also give much information to prospective manufacturers, and others who may wish to avail themselves of our many advantages in that line. The sketches of the various cities are necessarily brief and incomplete, but any one wishing further information are respectfully referred to the Mayors, or Secretaries of the Commercial Clubs in the respective cities.

HUBERT VREELAND, Commissioner.

330250



HUBERT VREELAND, Commissioner.

nd

SEVENTEENTH BIENNIAL REPORT
OF THE
Bureau of Agriculture, Labor and Statistics.
STATE OF KENTUCKY.

Commonwealth of Kentucky,
Office of Commissioner of Agriculture,

Frankfort, December 31, 1907.

To the General Assembly of Kentucky:

I have the honor to submit herewith the Seventeenth Biennial Report of the State Department of Agriculture, embracing the work accomplished by the State Bureau of Agriculture, Labor and Statistics and the State Board of Agriculture, Forestry and Immigration for the two years ending December 31, 1907.

I trust that I will be pardoned for expressing some degree of satisfaction at the results achieved, especially in view of the fact that the widening of the scope and the strengthening of the influence of the Department has been brought about under adverse circumstances. While there is every evidence of confidence in this Department on the part of the farmers and the citizens of the State, and while there has been a generous co-operation on the part of the people, generally speaking, there is a condition existing in the State at present that has affected the progress of the work to a certain

vi *Seventeenth Biennial Report Bureau of Agriculture.*

degree. This condition is not due to any antagonism on the part of any organization or individuals, but is due solely to a misconception of the objects and purposes of this Department by some of the farmers. During the past four years a determined effort has been put forth by the Department to show the advantages to be derived from the intelligent organization of the farmers for their common good and this Department is in hearty sympathy with all organizations whose object is to advance the general welfare of the farmers of the State so long as they keep within the confines of the law. Some few persons in the various counties of the State have, however, entertained the erroneous idea that the objects of this Department are to induce the farmers to grow more products regardless of the demand and of existing conditions. But I am pleased to report that this idea is rapidly being dissipated and that the members of the tobacco associations are beginning to understand that the real objects of the Department are to instruct the farmers along the lines of growing more pounds and more bushels to the acre, thus reducing the cost of labor and putting into the pockets of the farmer more returns for the capital invested.

During the first two years of my administration of the affairs of this office we were handicapped to a degree, not so much by the scope of the work outlined in the law, as by the limited funds placed at our disposal. The Department had an appropriation of only \$13,000 and out of this amount the salaries of the Commissioner, the Assistant Commissioner, the Labor Inspector and the Assistant Labor Inspector were paid, leaving a very small sum to be applied to the general running expenses. During those two years, however, the work of the Department was conducted in such manner as to inspire the confidence of the General Assembly, with the result that an additional appropriation of \$20,000 was allowed and additional responsibilities were placed on the Department by the creation of a State Board of Agriculture, Forestry and Immigration

of which board the Commissioner was made ex-officio Chairman.

From the day I assumed the responsibilities of this important branch of the State Government it became my ambition to enlist the support of the farmers in every county in the State in the work of the Department to the end that successful and permanent institute societies might be organized in each county. I am pleased to report that an organization had been formed in every county in the State and for two successive years a two-days' institute has been held in each of the 119 counties. This work has already brought about a marked change in the agricultural conditions of the State. It is freely admitted by intelligent farmers in all sections of Kentucky that the farmers generally are more interested in scientific investigation and modern methods of agriculture than they have been at any time in the history of the State. These organizations were effected only after untiring work on the part of every member of the Department and I am of the opinion that if this work is continued in an intelligent manner the good results will be incalculable in the future. Kentucky should be second to no State in the Union agriculturally and with the hearty co-operation on the part of the farmers and a comprehensive and determined policy on the part of the State Department of Agriculture Kentucky is destined to eventually take front rank among the agricultural States of the nation.

During the first two years of my administration as many institutes were held as the appropriation would admit of and in addition the alfalfa and corn special train covered a large territory. After the passage of the law creating the State Board of Agriculture, Forestry and Immigration the Department set about to carry the provisions of the new law into effect.

The first important step was to locate the State Fair. At the first meeting of the Board in Frankfort the Fair was located at Louisville. Since then two successful State Fairs have been held

viii *Seventeenth Biennial Report Bureau of Agriculture.*

in that city. The two fairs yielded a profit of about \$18,000. Property known as the Duffy tract in the western end of the city of Louisville was recently selected as the permanent home of the Fair. A detailed statement of the two fairs held under the State Board will be found elsewhere.

The Board next considered the provision of the law relating to forestry. An agreement was secured with the National Forest Service whereby that Department is to pay one-half the expenses of a forest survey of Kentucky and the State Board the other half. At the present time eleven counties have been surveyed. A complete report, with a comprehensive map attached, is given elsewhere in this volume.

After giving considerable thought to the question of immigration the Committee on Immigration, appointed by the State Board, came to the conclusion that it would be futile to send an agent to any of the ports of entry in the United States as nearly all the foreigners emigrating to this country have fixed upon their destination before leaving their homes. The committee therefore decided to send Mr. Chas. G. Mutzenberg, of Frankfort, to Switzerland as the Special Agent of this State to induce emigration to Kentucky. Mr. Mutzenberg was a resident of Switzerland for twenty years and he proceeded at once to the work of appointing sub-agents and to the carrying out of the general instructions of the Board. He had not proceeded far in his work when he was notified that a recent law required agents to be permanently domiciled in Switzerland. Mr. Mutzenberg was compelled to cancel his newspaper advertising and his mission was rendered practically ineffective. Mr. Mutzenberg's report is presented in this volume.

I had the honor to be appointed a member of the Kentucky-Jamestown Exposition Commission and this Department, at the request of the Commission, secured and maintained an agricultural exhibit during the life of the Exposition.

The Institute work during the past two years has been very successful and the interest in this work is increasing rapidly. The State Institute was well attended and the interest was all that could be desired. As a result of the State and County Institutes many good lecturers are being developed throughout the State and in a few years the Commissioner will be enabled to secure his entire force from among the progressive farmers of Kentucky.

Recommendations.

While the last General Assembly was liberal with this Department, still I feel it my duty to make a few recommendations that are necessary to the agricultural and kindred interests of the State.

Board Should Have More Time.

After having served as Chairman of the State Board of Agriculture, Forestry and Immigration for two years I am convinced that the work outlined for the Board cannot be accomplished properly in thirty days, the time now allowed for Board meetings. The State Fair buildings must be constructed, a track must be made and many other matters of importance must be passed upon by the Board in addition to the arduous task of arranging for and conducting a fair itself. The matters of forestry and immigration are both of sufficient importance to justify the Board in giving a liberal amount of its time to their consideration.

I therefore recommend that the law be so amended as to allow sixty days in lieu of thirty as now designated, for Board meetings.

Sub-Experiment Stations.

With the increasing desire for a better knowledge of soils and the nature of the crops grown, has come a demand not only

x ***Seventeenth Biennial Report Bureau of Agriculture.***

for a closer relationship with the Experiment Station but there is a growing demand for a sub-station in eastern Kentucky and one in the western part of the State. The soil of Kentucky is so diversified that this step becomes almost imperative. While the Lexington Station has, under the able management of Director M. A. Scovell, been carrying on a series of experiments in various parts of the State for many years, the results are not as satisfactory as they would be if two sub-stations were created. I am of the opinion, however, that these stations should be under the supervision of the Director at Lexington. Director Scovell joins me in recommending to your Honorable Body that you create these two stations.

Increase in Appropriation for Forestry Purposes.

In view of the fact that this Department is, in conjunction with the National Forest Service, now conducting the first forest survey ever undertaken in the State, and in view of the crying need for practical results along the lines of forest conservation, I am convinced that the State Board of Agriculture, Forestry and Immigration should be given the power to appoint a State Forester. A competent forester could look after the State's interests while the present survey is in progress in addition to the many urgent duties now requiring the attention of a practical forester. In order that the Board may be enabled to carry on this important work intelligently and along practical lines I hereby recommend that the sum of \$10,000 be appropriated annually for forestry purposes. This appropriation should be in lieu of the \$2,000 now appropriated but it should not come out of the general appropriation now allowed the Board.

State Aid for Roads.

Since my connection with this Department I have made it a point to send road experts into the various counties to lecture on

the important question of road construction and maintenance. The lecturers were also instructed to enlist the co-operation of the Fiscal Courts in the movement for better roads. In many counties the work has brought practical results. When it is considered that the National Government expends millions of dollars annually on her waterways it is singular that so little has been accomplished in the all-important matter of road building. While it may be many years before we can hope for national aid I am of the opinion that the time is opportune for the enactment of a law whereby the State, counties and towns shall pay a just proportion of the expense of building and improving the main roads of the State.

Elsewhere in this report will be found complete statement of the condition of roads, number of miles, how operated, etc. This is the first complete statement ever published by the State.

Expense of Printing Reports, Etc., Should Come Out of

General Fund.

I respectfully recommend that the law regulating this Department be so amended as to allow the expenses for the printing of all reports to be charged to the General Fund.

General Summary.

At the close of my term of office I feel a pardonable pride in the fact that I have given the Department my best energies and have been enabled, with the aid of my competent assistants, to lift the Department out of a rut. I have worked unceasingly for the improvement of the State's agricultural resources and have administered the affairs of this office faithfully and conscientiously.

xii *Seventeenth Biennial Report Bureau of Agriculture.*

In this work I have had the unstinted co-operation of my capable corps of assistants whose loyalty to duty and whose interest in the upbuilding of the Commonwealth has been no less than mine.

The report of the work accomplished by the Labor Inspector and the Assistant Labor Inspector, who have been both faithful and efficient in the discharge of their duties, is presented under separate cover.

I gratefully acknowledge the uniform courtesy and valuable assistance extended at all times by the chiefs and subordinates in the other State departments.

Respectfully,

HUBERT VREELAND,

Commissioner.



CHAS. MCINTIRE.

L. G. SPENCER.

S. E. STRODE.





The Department of Agriculture and Farmers' Organizations.

In order that the farmers may get the proper results from the Department of Agriculture, Labor and Statistics, I deem it necessary that they should understand for what purpose the department was created and should know some of the past present history of the Bureau.

I assert without hesitancy that there is no more important department in the State Government and, given the hearty co-operation of the farmers of the State, it can be made the means through which untold good can be accomplished.

Section 33 of the Statute governing this department says:

"The efforts of the Bureau shall be directed to the promotion of agriculture, horticulture, manufactures and to matters relating to labor and statistics; and the Commissioner shall promote and encourage, as far as practicable, the organization of agricultural and horticultural societies and other associations in the several counties, and ascertain the agricultural and horticultural, mechanical, commercial and educational conditions of every county, giving in detail, the quantity and quality of land under cultivation; the kinds, amounts and value of the annual field crops; the annual production of orchards, gardens, dairies and mines; the quantity and value of domestic manufactures; the kinds, value and increase of livestock; the annual products of mechanical industry and skill; the character of labor employed in mines, factories and the cultivation of the soil, and the prices paid therefor; the value of exports and imports, the number of miles of railroads, turnpikes, navigable streams and postoffices, the names of same, in which county; how and by whom turnpikes and other public roads are operated and kept in repair; the name, location and publication of cities, towns and villages; the number and value of school-houses and churches; the names, capital and purposes of charitable institutions together with such other vital, social, physical and political statistics as he may deem proper and expedient."

2 *Seventeenth Biennial Report Bureau of Agriculture.*

Thus it will be seen that the Commissioner is given a wide latitude in which to operate, but this statistical matter fades into insignificance in the light of the other duties which the Commissioner should perform in the interest of the agricultural masses. I consider that of organizing the farmers into clubs or societies for their mutual benefit, and the holding of Farmer's Institutes, is one of the most important features of the department's work. There is now an organization in every county in the State.

That the Farmer's Institute has been one of the prime factors in the agricultural development of the most advanced States of the Union can not be successfully denied. Inquiry of those counties in this State where institutes have been held will develop the fact that they have accomplished much for the communities in which they have been held. After several institutes have been held in a county, it is an easy matter to note the change for the better. By meeting together and disseminating ideas, the farmer is enabled to take advantage of the methods by which his neighbors succeed and to avoid the evils attendant on their errors.

Before the adoption of the new Constitution of Kentucky in 1892, the Commissioner of Agriculture was appointed by the Governor. He was not allowed any assistance whatever in the conduct of the Bureau, and only two thousand dollars was allowed for all the expenses of the department, except the salaries and the printing of the Biennial Reports. The department now has an annual appropriation of thirteen thousand dollars in the Bureau fund and twenty thousand dollars in the Board fund.

A Farmer's Institute has been held in every county in the State each year since the old law was amended. By holding a series of Institutes, the cost can be greatly reduced and untold good can be accomplished for the agricultural interest of the State.

Every farmer should feel that this department was created for his benefit and he should put himself in touch with it and by his co-operation add to its usefulness to the farming interests in general.

There are many farmers in the State who do not know that this department issues Biennial Reports, giving the various resources of the State, which are to be had for the asking. This department also stands ready at all times to answer any and all questions relating to farming in this State. The Experiment Station at Lexington also issues bulletins upon various subjects relating to farming, livestock breeding, etc.,

and they are always glad to send these out upon application, or to answer any questions whatsoever relating to the State. There is a spirit of enterprise and an era of good feeling now extant in Kentucky and the farmer should take advantage of the opportunities being presented to better his condition. Prejudice against what so many of our farmers delight in terming "book-farming" is being put behind and the farmer is coming to a realization of the fact that science and practice must go hand in hand in these days of deteriorating soils.

It should be potent to every farmer that by organization the farmers can accomplish those things that they failed to accomplish by single effort. Every other phase of life has found it beneficial to organize.

Whenever a county makes a call for organization the State Lecturer and Organizer is sent to that county and the organization is effected. The clubs are entitled to make a call on the Department of Agriculture for a Farmers' Institute and in no case has this request been denied. There is no interest more fraught with good results for the whole people of the State and of the nation than the agricultural interests. Farming is the foundation stone upon which rests the success of commercialism, as the general failure of crops affects the people in every walk of life. If the farmer fails to take an interest in himself, he can not reasonably expect others to interest themselves in his behalf, but if he will fall in line with the swift-moving procession of the day, with Kentucky's soil, sun and skies, he can make this grand old Commonwealth the garden spot of the universe.

Farmers' Institute Bulletin for 1908.

The following bulletin was sent to every Farmers' Club in the State as a guide to officers in the arranging of programs, advertising the meetings, etc.

STATE OF KENTUCKY

Department of Agriculture

HUBERT VREELAND, Commissioner

Bureau of
AGRICULTURE, LABOR
and **STATISTICS**

State Board of
AGRICULTURE, FORESTRY
and **IMMIGRATION**

DIVISION OF FARMERS' INSTITUTES.

To the Farmers' Institute Societies of Kentucky:

In conformity with that section of the law governing this department relating to the conduct of Farmers' Institutes in Kentucky, a two-days' institute has been scheduled for every county in the State. The State has been divided into five institute districts in order that lecturers may be sent into the several sections whose experience in certain lines of farming especially adapts them for effective work in their respective districts.

District No. 1 begins in Meade county, August 26 and terminates October 26; District No. 2 begins in McLean county August 26 and terminates October 25; District No. 3 begins in Carroll county September 2, and ends October 26; District No. 4 begins in Harlan county August 19 and ends October 28; District No. 5 begins in Rowan county, August 19 and ends October 29. Three regular lecturers have been assigned to each district whose names and repertoires will be found elsewhere in this bulletin. Several special lecturers are held in reserve to be used as occasion may require. Dates as fixed in this bulletin can not be changed as the changing of dates would disarrange the entire itinerary. Barring accidents and unavoidable delays the lecture forces will be on hand on the dates assigned and every local organization is expected to have all arrangements made in advance according to instructions given herein.

PROGRAM.

Officers of local organizations of a special committee should arrange the program, assigning the regular lecturers and using such subjects from their repertoires as may be best adapted to the respective districts and alternating with local speakers. The local talent should be assigned subjects with which they are thoroughly conversant and they should be notified in ample time to signify their acceptance and properly prepare their papers. In order that the addresses may be published and disseminated over the State all lecturers are urged to carefully prepare their addresses on one side of the paper, but it is preferred that local speakers do not confine themselves strictly to their manuscripts.

Programs should not be made too long and sufficient time should be given each subject in order that it may be thoroughly discussed. The president of the local organizations, however, should see that the meeting does not drag. All political and sectarian discussions must be avoided during the meetings as the institutes are supported by the taxpayers of the State and they are held for the benefit of all who desire to take advantage of them.

This department will allow a claim for an amount not to exceed \$3.00 for the printing of programs and hand bills when said claim is properly signed by the President and Secretary.

DUTY OF SECRETARIES.

Secretaries of local societies should see that the meetings are well advertised. It is assumed that all papers will publish matter relating to institutes free of charge as the country press has always shown a disposition to aid in any cause that is for the advancement of the farming interests of their counties. It is especially important that secretaries should notify this department of the progress of the preliminary arrangements as the commissioners desires to keep in close touch with each institute in order that he may be assured that everything possible is being done to make the institute thoroughly successful.

In order that the work of the organization may be better facilitated and that there may be some unity of action the following rules are hereby established.

ORGANIZATION.

No club shall be organized under the auspices of this Bureau with less than twenty members. Any one interested directly or indirectly in the promotion of agricultural, horticultural and labor interests of the State may become a member of these clubs. The membership of the clubs may select their own officers, which shall be as follows: President, Vice-President, Second Vice-President, Treasurer and Secretary. A small fee for the maintenance of the club may be charged, the amount and time of payment being fixed by a majority vote of the members. It shall be the duty of the officers of the club to provide a place of meeting, to assist in making program, and to make all local arrangements for the Institute. The officers shall also have charge of the distribution of any seed or literature furnished by this Department, or the National Bureau through it.

No Farmers' Institutes shall be held until a club is first organized, and the organization in such shape as to be able to assist in the preparatory work of holding such institute.

MEETINGS.

The club shall, if practicable, meet once a month, the local rules being in harmony with the rules governing the General Assembly of Kentucky. Intermediate meetings may be held upon the call of the President.

REPORT OF ORGANIZATION.

After the club is organized it shall be the duty of the Secretary to make a report to the Commissioner of Agriculture, Etc., at Frankfort, giving the names and postoffice addresses of each officer and member thereof, and he shall make report at least four times a year of all members admitted at subsequent meetings.

NOTE:—The members of these clubs are urged to constantly agitate the question of Good Roads and to do all in their power to assist in bringing about tangible results along this line.

HUBERT VREELAND,
Commissioner.

LECTURERS.

Employed by

Kentucky State Board of Agriculture FORESTRY AND IMMIGRATION.

For the Institute Season of 1907.

S. J. Baldwin.....	Talmdage, O.
J. S. Brigham.....	Bowling Green, O.
R. C. Crenshaw.....	Frankfort, Ky.
Wm. M. Cook.....	Camden, O., R. R. No. 3.
J. Al. Dobie.....	Wapakoneta, O.
M. F. Johnson.....	Buechel, Ky.
W. T. Kane.....	Fallsburg, Ky.
H. P. Miller.....	Sunbury, O.
E. C. Martindale.....	Wilkinson, Ind.
Chas. McIntire.....	Chandlersville, O.
Lowell Roudebush.....	New Richmond, O.
Geo. P. Rogers.....	Smithland, Ky.
L. G. Spencer.....	Warren, O.
S. E. Strode.....	Pennsville, O.
J. B. Walker.....	Hopkinsville, Ky.
W. D. Zinn.....	Phillipi, W. Va.

Special Lecturers.

Jos. E. Wing.....	Mechanicsburg, O.
Prof. M. A. Scovell.....	Lexington, Ky.
Prof. E. S. Good.....	Lexington, Ky.
Prof. W. H. Scherffius.....	Lexington, Ky.
Prof. J. J. Hooper.....	Lexington, Ky.
Prof. R. M. Allen.....	Lexington, Ky.

INSTITUTE LECTURERS.

With Their Repertoires.

S. J. Baldwin, Talmadge, O.

1. Silos and Silage. Twenty minutes.
2. Feeds and Feeding. Thirty minutes.
3. The Dairy Cow and Her Care. Thirty minutes.
4. The Corn Crop. Thirty minutes.
5. Improving Texture and Fertility of Soils. Thirty minutes.
6. Commercial and Barnyard Fertilizers. Thirty minutes.
7. Our Friends among Insects and Birds. Twenty minutes.
8. Evolution of the Farmer. (Evening) Sixty minutes.
9. The Origin, Course and Effect of Streams. (Evening) Sixty minutes.
10. The Glacial Epoch and its Results. (Evening) Sixty minutes.

J. S. Brigham, Bowling Green, Ohio.

1. Potato Crop. Methods of Culture. Twenty-five minutes.
2. Skill in Farming. Twenty-five minutes.
3. The Home Fruit Garden. Twenty minutes.
4. The Farm Vegetable Garden. Twenty-five minutes.
5. Truck Gardening and its Profits. Twenty-five minutes.
6. Our Corn Crop. Thirty minutes.
7. The Farmer's Share. (Night) Forty minutes.
8. Five Years on a Texas Cattle Ranch. (Night) Fifty minutes.

R. C. Crenshaw, Frankfort, Ky.

1. Restoration of Worn Lands to a State of Productiveness. Thirty minutes.
2. Necessity of Conserving Soil Moisture. Thirty minutes.
3. Leguminous Plants. Thirty minutes.
4. Alfalfa—Its Value and How to Grow. Forty-five minutes.
5. Sheep—The Friend to the Man on a Poor Farm. Thirty minutes.
6. Tobacco Breeding for Quality and Type. Thirty minutes.
7. Wheat—Preparation of Soil and Seeding. Thirty minutes.
8. Seed Corn Selection and Testing. Forty minutes.
9. Family Partnership or Family Corporation. (Night) Thirty minutes.
10. The Girl on the Farm. (Night.)

William M. Cook, Camden, Ohio.

1. Crop Rotation. Thirty minutes.
2. Sorghum; Care and Value as a Winter Feed. Twenty-five minutes.
3. Soil Improvement. Twenty-five minutes.
4. The Practical Use of Commercial Fertilizers. Twenty-five minutes.
5. The Possibilities of Scientific Agriculture. Twenty-five minutes.
6. Short Cuts in Farming. Twenty-five minutes.
7. The Growing of Alfalfa. Twenty-five minutes.
8. Economical Hog Raising. Twenty-five minutes.
9. Modern Corn Culture. Twenty-five minutes.
10. Back to the Soil. (Night) Forty minutes.

J. A. Dobie, Wapakoneta, Ohio.

1. Some Objects of Cultivation. Thirty minutes.
2. A Plea for Better Feeding. Twenty-five minutes.
3. Improving Soil Texture. Thirty-five minutes.
4. Some Points in Swine Husbandry. Thirty minutes.
5. Intensive Farming. Thirty minutes.
6. Educating the Farm Horse.
7. Taste in Farming. Twenty minutes.
8. A Study in Crop Rotations. Twenty-five minutes.
9. Character as Affected by Country Life. (Night) Thirty-five minutes.
10. Looking Forward. (For Young People) Forty-five minutes.
11. Tile Draining.

W. T. Kane, Fallsburg, Ky.

1. Alfalfa. Thirty minutes.
2. Breeding and Development of Swine and Their Diseases. Thirty minutes.
3. Sheep. Twenty-five minutes.
4. Goats. Twenty-five minutes.
5. Pastures on Hill Lands. Thirty minutes.
6. Pure Seed. Twenty minutes.
7. Maintaining Soil Fertility on Hill Lands. Thirty minutes.
8. Beautifying the Home. (Night Forty minutes.)

M. F. Johnson, Buechel, Ky.

1. Small Fruits:
 - (a) Selection of Varieties;
 - (b) Planting and Cultivation.
2. Planting an Orchard:
 - (a) Site;
 - (b) Varieties;
 - (c) Planting and Cultivation.
3. Insect Enemies:
 - (a) To Root;
 - (b) Trunk and Branch;
 - (c) Leaf and Blossom;
 - (d) Treatment for Same.
4. Intensive vs. Expansive Farming.
5. How to Keep the Boys on the Farm.
6. An Ideal Supply of Fruits for the Farmer and How to Plant Economically.
7. An Ideal Acre.

H. P. Miller, Sunbury, Ohio.

1. Counsel of a Shepherd.
2. Economical Pork Productions.
3. Care and Management of the Farm Team.
4. The Management of a Dairy.
5. About Silos and Silage.
6. Some Common Ailments of Animals and Their Treatment.
7. The Relation of Moisture to Crop Production and Ways of Controlling it.
8. Some Factors in Soil Fertility.
9. Improvement of Crops through Seed Selection.
10. The Way Up. (Evening.)

E. C. Martindale, Wikinson, Ind.

1. The Care and Management of Beef Cattle.
2. Buying or Rearing Cattle to Feed.
3. The Farmer's Horse, his Care and Training.
4. How to Get a Good Stand of Clover.
5. How to Handle the Clover Crop.
6. How Clover Improves the Soil.
7. Good Pastures.
8. Tile Drainage; Why and How.
9. Improving the Soil.
10. The Land Owner and Tenant.
11. An Agricultural Education.
12. The Farm Fence.
13. The Home and Its Influence. (Evening).
14. The Boy. (Evening).
15. Selection, Care and Testing Seed Corn.
16. Preparation of Soil, Planting and Tillage of Corn.

Charles McIntire, Chandlersville, Ohio.

1. Blue Grass—Its Value and Care. (Thirty minutes).
2. Growing, Selecting and Testing Seed Corn. (Thirty-five minutes).
3. Profitable Classes of Horses for the Farmer to Produce. (Thirty-five minutes).
4. The Cattle Business for Profit. (Twenty-five minutes).
5. Increasing the Productiveness of the Soil. (Thirty-five minutes).
6. Feeding the Farm Animals.
7. The Value of An Agricultural Education and How It May Be Obtained. (Night). (Thirty minutes).

12 *Seventeenth Biennial Report Bureau of Agriculture.*

Lowell Roudebush, New Richmond, Ohio

Group 1.

1. Alfalfa. (Fifteen minutes).
2. Blue Grass. (Fifteen minutes).
3. Noxious Weeds and How to Destroy Them. (Twenty minutes).
4. Why Farmers Should Raise Sheep. (Twenty minutes).
5. Is It Profitable to Raise Horses? If So What Class? (Twenty minutes).
6. Feeding Stock for Profit:—
 - (a) The Animal. (Fifteen minutes);
 - (b) Its Food. (Fifteen minutes);
 - (c) Its Environment. (Fifteen minutes).

Group 2.

7. The Farmer's Garden. (Twenty minutes).
8. Care and Management of Small Fruit. (Twenty minutes).
9. The Outlook for Orcharding in Kentucky. (Twenty-five minutes).
10. The Essentials in Spraying. (Twenty minutes).

Group 3.

11. Natural Enemies of Insect Pests. (Twenty-five minutes).
12. Some New Insects of Grain and Forage Crops.
13. The Codling, Moth. (Fifteen minutes).
14. The Hessian Fly.
15. The San Jose Scale.
16. What the U. S. Dept. of Agriculture is Doing for the Farmers. (Thirty minutes).
17. Uncle Sam's Land of the Midnight Sun. (Evening).

Geo. P. Rogers, Smithland, Ky.

1. Building and Maintaining Dirt Roads. (Forty-five minutes).
2. Sheep and Angora Goats. (Thirty minutes).
3. The Grasses. (Thirty minutes).
4. The Canning Factory and the Small Farmer. (Forty minutes).
5. Agriculture in England from a Personal Viewpoint. (Night).
6. Social and Political Conditions in England.
7. Kentucky Forever. (Night).

L. G. Spencer, Warren, Ohio.

1. The Dairy Cow and Her Care. (Thirty minutes).
2. Butter Making on the Farm. (Thirty minutes).
3. The Silo—Its Construction and Value. (Thirty minutes).
4. Improving the Corn Crop. (Thirty minutes).
5. Shall We Grow Alfalfa? (Thirty minutes).
6. The Potato; Early and Late. (Twenty-five minutes).
7. Noxious Weeds. (Twenty minutes).
8. The Farmers' Friends. (Thirty minutes).
9. Small Fruit. (Twenty-five minutes).
10. Swine Growing for Profit. (Twenty minutes).
11. The New Agriculture. (Forty minutes).
12. Alfalfa.

S. E. Strode, Pennsville, Ohio.

1. The Apple Orchard—Planting and Growing. (Twenty-five minutes).
2. Making an Old Apple Orchard Profitable. (Twenty minutes).
3. Clover on Ohio Farms. (Thirty minutes).
4. Plant Food from Legumes, Manure and Commercial Fertilizer. (Forty-five minutes).
5. Winter Eggs for the Farmer's Table and Market Basket. (Thirty minutes).
6. Problems in Hillside Farming. (Thirty minutes).
7. Some Things I Have Lately Learned About Earth Roads, Smut in Oats, etc. (Twenty-five minutes).
8. Sheep on the Farm. (Thirty minutes).
9. Points in Wheat Culture. (Thirty minutes).
10. Some Mistakes We Farmers Make. (Thirty-five minutes).
11. Shall the Boy Choose Agriculture for an Occupation? (Forty-five minutes).

J. B. Walker, Hopkinsville, Ky.

1. Alfalfa in Kentucky.
2. Wheat Growing; Selection of the Seed, Preparation of the Land and Seeding.
3. Restoring Fertility to Worn Soils.
4. Corn Growing—Seed Selection, Planting and Cultivation.
5. Dairying.
6. Incubator and its Management.
7. Recent Experiments with Soils.
8. Road Building.

14 *Seventeenth Biennial Report Bureau of Agriculture.*

W. D. Zinn, Phillipi, W. Va.

1. The Big Four of Animal Husbandry.
2. How to Get a Profit Out of Feeding Cattle.
3. How to Restore the Old Field.
4. Saving and Applying Farm Manures.
5. Commercial Fertilizers and Their Uses.
6. What Shall We Do With the Labor Problem?
7. Silos and Silage.
8. Six Years' Experience With Alfalfa.
9. Some Mistakes Farmers Make.
10. The Importance of Moisture and How to Retain It.
11. How to Save and Apply Barnyard Manures.
12. Why Our Pastures Run Out and How to Prevent It.
13. Feeds and Feeding.
14. Leguminous Crops and Their Importance.
15. Soil Fertility.

FARMERS' INSTITUTES

To be Held Under the Auspices of the State Board of Agriculture, Forestry
and Immigration for the Institute Season of 1908. Alphabetically
Arranged by Counties.

County	Date	Days.	Place
Adair	Oct. 3-4	Thu. and Fri.	Columbia
Allen	Oct. 26-28	Sat. and Mon.	Scottsville
Anderson	Oct. 12-14	Sat. and Mon.	Lawrenceburg
Ballard	Oct. 10-11	Thu. and Fri.	Wickliffe
Barren	Oct. 16-17	Wed. and Thu.	Glasgow
Bath	Sept. 30-Oct. 1	Mon. and Tues.	Owingsville
Bell	Aug. 22-23	Thu. and Fri.	Pineville
Boone	Sept. 9-10	Mon. and Tues.	Burlington
Bourbon	Oct. 2-3	Wed. and Thu.	Paris
Boyd	Aug. 26-27	Mon. and Tues.	Catlettsburg
Boyle	Sept. 28-30	Sat. and Mon.	Danville
Bracken	Oct. 11-12	Fri. and Sat.	Brooksville
Breathitt	Oct. 9-10	Wed. and Thu.	Jackson
Breckinridge	Aug. 28-29	Wed. and Thu.	Hardinsburg
Bullitt	Sept. 13-14	Fri. and Sat.	Shepherdsville
Butler	Sept. 2-3	Mon. and Tues.	Morgantown
Caldwell	Sept. 13-14	Fri. and Sat.	Princeton
Calloway	Sept. 23-24	Mon. and Tues.	Murray
Campbell	Oct. 9-10	Wed. and Thu.	Alexandria
Carlisle	Oct. 8-9	Tues. and Wed.	Bardwell
Carroll	Sept. 2-3	Mon. and Tues.	Carrollton
Carter	Aug. 21-22	Wed. and Thu.	Grayson
Casey	Oct. 9-10	Wed. and Thu.	Liberty
Christian	Oct. 16-17	Wed. and Thu.	Church Hill
Clark	Sept. 25-26	Wed. and Thu.	Winchester
Clay	Sept. 2-3	Mon. and Tues.	Manchester
Clay	Sept. 28-30	Sat. and Mon.	Oneida
Clinton	Sept. 19-20	Thu. and Fri.	Albany
Crittenden	Sept. 11-12	Wed. and Thu.	Marion
Cumberland	Sept. 23-24	Mon. and Tues.	Burkesville
Daviess	Sept. 2-3	Mon. and Tues.	West Louisville
Edmonson	Oct. 19-21	Sat. and Mon.	Brownsville
Elliott	Oct. 28-29	Mon. and Tues.	Sandy Hook
Estill	Oct. 7-8	Mon. and Tues.	Irvine

16 *Seventeenth Biennial Report Bureau of Agriculture.*

County	Date	Days.	Place
Fayette	Sept. 23-24	Mon. and Tues.	Lexington
Fleming	Oct. 23-24	Wed. and Thu.	Flemingsburg
Floyd	Sept. 9-10	Mon. and Tues.	Prestonsburg
Franklin	Sept. 20-21	Fri. and Sat.	Forks of Elkhorn
Fulton	Oct. 3-4	Thu. and Fri.	Hickman
Gallatin	Sept. 4-5	Wed. and Thu.	Warsaw
Garrard	Oct. 3-4	Thu. and Fri.	Lancaster
Grant	Sept. 13-14	Fri. and Sat.	Williamstown
Graves	Sept. 30-Oct. 1	Mon. and Tues.	Mayfield
Grayson	Sept. 4-5	Wed. and Thu.	Leitchfield
Green	Sept. 25-26	Wed. and Thu.	Greensburg
Greenup	Aug. 23-24	Fri. and Sat.	Greenup
Hancock	Aug. 30-31	Fri. and Sat.	Hawesville
Hardin	Sept. 6-7	Fri. and Sat.	Elizabethtown
Harlan	Aug. 19-20	Mon. and Tues.	Harlan
Harrison	Oct. 4-5	Fri. and Sat.	Cynthiana
Hart	Oct. 14-15	Mon. and Tues.	Horse Cave
Henderson	Sept. 4-5	Wed. and Thu.	Corydon
Henry	Oct. 19-21	Sat. and Mon.	New Castle
Hickman	Oct. 5-7	Sat. and Mon.	Clinton
Hopkins	Oct. 18-19	Fri. and Sat.	Madisonville
Jackson	Sept. 6-7	Fri. and Sat.	McKee
Jefferson	Sept. 11-12	Wed. and Thu.	Anchorage
Jessamine	Oct. 8-9	Tues. and Wed.	Nicholasville
Johnson	Sept. 2-3	Mon. and Tues.	Paintsville
Kenton	Sept. 11-12	Wed. and Thu.	Independence
Knott	Sept. 19-20	Thu. and Fri.	Hindman
Knox	Aug. 24-26	Sat. and Mon.	Barbourville
Larue	Sept. 9-10	Mon. and Tues.	Hodgenville
Laurel	Aug. 29-30	Thu. and Fri.	London
Lawrence	Aug. 28-29	Wed. and Thu.	Louisa
Lee	Oct. 4-5	Fri. and Sat.	Beattyville
Leslie	Sept. 25-26	Wed. and Thu.	Hyden
Letcher	Sept. 16-17	Mon. and Tues.	Whitesburg
Lewis	Oct. 19-21	Sat. and Mon.	Vanceburg
Lincoln	Oct. 1-2	Tues. and Wed.	Stanford
Lisvingston	Sept. 26-27	Thu. and Fri.	Duley Bluff Ch.
Logan	Oct. 23-24	Wed. and Thu.	Russellville
Lyon	Sept. 16-17	Mon. and Tues.	Kuttawa
Madison	Oct. 5-7	Sat. and Mon.	Richmond
Magoffin	Sept. 5-6	Thu. and Fri.	Saylorsville
Marion	Sept. 20-21	Fri. and Sat.	Lebanon
Marshall	Sept. 20-21	Fri. and Sat.	Benton
Martin	Aug. 30-31	Fri. and Sat.	Inez
Mason	Oct. 17-18	Thu. and Fri.	Maysville
McCracken	Sept. 18-19	Wed. and Thu.	Maxon's Mill
McLean	Aug. 26-27	Mon. and Tues.	Calhoun



E. C. MARTINDALE.

R. C. CRENSHAW.

W. T. KANE.

County	Date	Days.	Place
Meade	Aug. 26-27	Mon. and Tues.	Brandenburg
Menifee	Oct. 19-21	Sat. and Mon.	Frenchburg
Mercer	Oct. 10-11	Thu. and Fri.	Harrodsburg
Metcalfe	Sept. 30-Oct. 1	Mon. and Tues.	Edmonton
Monroe	Sept. 26-27	Thu. and Fri.	Tompkinsville
Montgomery	Sept. 27-28	Fri. and Sat.	Mt. Sterling
Morgan	Oct. 24-25	Thu. and Fri.	West Liberty
Muhlenburg	Oct. 25-26	Fri. and Sat.	Greenville
Nelson	Sept. 16-17	Mon. and Tues.	Boston
Nicholas	Oct. 25-26	Fri. and Sat.	Carlisle
Ohio	Aug. 29-30	Thu. and Fri.	Hartford
Oldham	Oct. 22-23	Tues. and Wed.	Lagrange
Owen	Sept. 6-7	Fri. and Sat.	Owenton
Owsley	Oct. 2-3	Wed. and Thu.	Booneville
Pendleton	Oct. 7-8	Mon. and Tues.	Falmouth
Perry	Sept. 23-24	Mon. and Tues.	Hazzard
Pike	Sept. 11-12	Wed. and Thu.	Pikeville
Powell	Oct. 16-17	Wed. and Thu.	Stanton
Pulaski	Oct. 14-15	Fri. and Sat.	Somerset
Robertson	Sept. 10-11	Mon. and Tues.	Mt. Olivet
Rockcastle	Sept. 4-5	Tues. and Wed.	Mt. Vernon
Rowan	Aug. 19-20	Mon. and Tues.	Morehead
Russell	Oct. 7-8	Mon. and Tues.	Jamestown
Scott	Sept. 16-17	Mon. and Tues.	Georgetown
Shelby	Oct. 17-18	Thu. and Fri.	Shelbyville
Simpson	Oct. 24-25	Thu. and Fri.	Franklin
Spencer	Oct. 15-16	Tues. and Wed.	Taylorsville
Taylor	Sept. 23-24	Mon. and Tues.	Campbellsville
Todd	Oct. 21-22	Mon. and Tues.	Elkton
Trigg	Oct. 14-15	Mon. and Tues.	Cadiz
Trimble	Oct. 24-25	Thur. and Fri.	Bedford
Union	Sept. 6-7	Fri. and Sat.	Morganfield
Warren	Oct. 22	Tuesday	Smith's Grove
Warren	Oct. 23	Wednesday	Woodburn
Washington	Sept. 18-19	Wed. and Thur.	Springfield
Wayne	Sept. 16-17	Mon. and Tues.	Monticello
Webster	Sept. 9-10	Mon. and Tues.	Dixon
Whitley	Aug. 27-28	Tues. and Wed.	Williamsburg
Wolfe	Oct. 12-14	Sat. and Mon.	Campton
Woodford	Sept. 18-19	Wed. and Thu.	Versailles

INSTITUTE DISTRICTS

With Lecturers Assigned to Each.

INSTITUTE DISTRICT No. 1.

Conducted by

Charles McIntire (Director) -----Chandlersville, O.

S. E. Strode-----Pennsville, O.

L. G. Spencer-----Warren, O.

Meade -----Brandenburg -----Monday and Tuesday, Aug, 26-27.
 Breckinridge -----Hardinsburg -----Wednesday and Thurs., Aug. 28-29.
 Hancock -----Hawesville -----Friday and Saturday, Aug. 30-31
 Daviess -----West Louisville-----Monday and Tuesday, Sept. 2-3.
 Henderson -----Corydon -----Wednesday and Thurs., Sept. 4-5.
 Union -----Morganfield -----Friday and Saturday, Sept. 6-7.
 Webster -----Dixon -----Monday and Tuesday, Sept. 9-10.
 Crittenden -----Marion -----Wednesday and Thurs., Sept. 11-12.
 Caldwell -----Princeton -----Friday and Saturday, Sept. 13-14.
 Lyon -----Kuttawa -----Monday and Tuesday, Sept. 16-17.
 McCracken -----Maxon's Mills -----Wednesday and Thurs., Sept. 18-19.
 Marshall -----Benton -----Friday and Saturday, Sept. 20-21.
 Calloway -----Murray -----Monday and Tuesday Sept. 23-24.
 Livingston -----Duley Bluff Ch.-----Thursday and Friday, Sept. 26-27.
 Graves -----Mayfield -----Mon. and Tues., Sept. 30-Oct. 1.
 Fulton -----Hickman -----Thursday and Friday, Oct. 3-4.
 Hickman -----Clinton -----Saturday and Monday, Oct. 5-7.
 Carlisle -----Bardwell -----Tuesday and Wednesday, Oct. 8-9.
 Ballard -----Wickliffe -----Thursday and Friday, Oct. 10-11.
 Trigg -----Cadiz -----Monday and Tuesday, Oct. 14-15.
 Christian -----Church Hill -----Wednesday and Thurs., Oct., 16-17
 Hopkins -----Madisonville -----Friday and Saturday, Oct. 18-19.
 Todd -----Elkton -----Monday and Tuesday, Oct. 21-22.
 Logan -----Russellville -----Wednesday and Thurs., Oct. 23-24.
 Muhlenburg -----Greenville -----Friday and Saturday, Oct. 25-26.

INSTITUTE DISTRICT No. 2.

Conducted by

M. F. Johnson (Director)-----Buechel, Ky.
 J. A. Dobie-----Wapakoneta, O.
 H. P. Miller (to Sept. 21)-----Sunbury, O.
 W. D. Zinn (Sept. 23 to Oct. 25)-----Phillipi, W. Va.

McLean -----Calhoun -----Monday and Tuesday, Aug. 26-27.
 Ohio -----Hartford -----Thursday and Friday, Aug. 29-30.
 Butler -----Morgantown -----Monday and Tuesday, Sept. 2-3.
 Grayson -----Leitchfield -----Wednesday and Thurs., Sept. 4-5.
 Hardin -----Elizabethtown -----Friday and Saturday, Sept. 6-7.
 Larue -----Hodgenville -----Monday and Tuesday, Sept. 9-10.
 Jefferson -----Anchorage -----Wednesday and Thurs., Sept. 11-12.
 Bullitt -----Shepherdsville -----Friday and Saturday, Sept. 13-14.
 Nelson -----Boston -----Monday and Tuesday, Sept. 16-17.
 Washington -----Springfield -----Wednesday and Thurs., Sept. 18-19.
 Marion -----Lebanon -----Friday and Saturday, Sept. 20-21.
 Taylor -----Campbellsville -----Monday and Tuesday, Sept. 23-24.
 Green -----Greensburg -----Wednesday and Thursday, Sept. 25-26.
 Boyle -----Danville -----Saturday and Monday, Sept. 28-30.
 Lincoln -----Stanford -----Tuesday and Wednesday, Oct. 1-2.
 Garrard -----Lancaster -----Thursday and Friday, Oct. 3-4.
 Madison -----Richmond -----Saturday and Monday, Oct. 5-7.
 Jessamine -----Nicholasville -----Tuesday and Wednesday, Oct. 8-9.
 Mercer -----Harrodsburg -----Thursday and Friday, Oct. 10-11.
 Anderson -----Lawrenceburg -----Saturday and Monday, Oct. 12-14.
 Spencer -----Taylorsville -----Tuesday and Wednesday, Oct. 15-16.
 Shelby -----Shelbyville -----Thursday and Friday, Oct. 17-18.
 Henry -----New Castle -----Saturday and Monday, Oct. 19-21.
 Oldham -----LaGrange -----Tuesday and Wednesday, Oct. 22-23.
 Trimble -----Bedford -----Thursday and Friday, Oct. 24-25.

INSTITUTE DISTRICT No. 3.

Conducted by

Lowell Roudebush (Director)-----New Richmond, O.
 J. S. Brigham-----Bowling Green, Ohio.
 Wm. M. Cook-----Camden, O. (R. F. D. No. 3).

Carroll -----Carrollton -----Monday and Tuesday, Sept. 2-3.
 Gallatin -----Warsaw -----Wednesday and Thurs., Sept. 4-5.
 Owen -----Owenton -----Friday and Saturday, Sept. 6-7.
 Boone -----Burlington -----Monday and Tuesday, Sept. 9-10.
 Kenton -----Independence ----Wednesday and Thurs., Sept. 11-12.
 Grant -----Williamstown ----Friday and Saturday, Sept. 13-14.
 Scott -----Georgetown -----Monday and Tuesday, Sept. 16-17.
 Woodford -----Versailles -----Wednesday and Thurs., Sept. 18-19.
 Franklin -----Forks of Elkhorn Friday and Saturday, Sept. 20-21.
 Fayette -----Lexington -----Monday and Tuesday Sept. 23-24.
 Clark -----Winchester -----Wednesday and Thurs., Sept. 25-26.
 Montgomery ----Mt. Sterling ----Friday and Saturday, Sept. 27-28.
 Bath -----Owingsville -----Mon. and Tues., Sept. 30-Oct. 1.
 Bourbon -----Paris -----Wednesday and Thurs., Oct. 2-3.
 Harrison -----Cynthiana -----Friday and Saturday, Oct. 4-5.
 Pendleton -----Falmouth -----Monday and Tuesday, Oct. 7-8.
 Campbell -----Alexandria -----Wednesday and Thurs., Oct. 9-10.
 Bracken -----Brooksville -----Friday and Saturday, Oct. 11-12.
 Robertson -----Mt. Olivet -----Monday and Tuesday, Oct. 14-15.
 Mason -----Maysville -----Thursday and Friday, Oct. 17-18.
 Lewis -----Vanceburg -----Saturday and Monday, Oct. 19-21.
 Fleming -----Flemingsburg ----Wednesday and Thurs., Oct. 23-24.
 Nicholas -----Carlisle -----Friday and Saturday Oct. 25-26.

INSTITUTE DISTRICT No. 4.

Conducted by

Hon. R. C. Crenshaw (Director).....Frankfort, Ky.
 E. C. Martindale.....Wilkinson, Ind.
 W. T. Kane.....Fallsburg, Ky.

HarlanHarlanMonday and Tuesday, Aug. 19-20.
 BellPinevilleThursday and Friday, Aug. 22-23.
 KnoxBarboursvilleSaturday and Monday, Aug. 24-26.
 WhitleyWilliamsburgTuesday and Wednesday, Aug. 27-28.
 LaurelLondonThursday and Friday, Aug. 29-30.
 ClayManchesterMonday and Tuesday, Sept. 2-3.
 JacksonMcKeeFriday and Saturday, Sept. 6-7.
 Rock CastleMt. VernonTuesday and Wednesday, Sept. 10-11.
 PulaskiSomersetFriday and Saturday, Sept. 13-14.
 WayneMonticelloMonday and Tuesday, Sept. 16-17.
 ClintonAlbanyThursday and Friday, Sept. 19-20.
 CumberlandBurksvilleMonday and Tuesday, Sept. 23-24.
 MonroeTompkinsvilleThursday and Friday, Sept. 26-27.
 MetcalfeEdmontonMonday and Tues., Sept. 30-Oct. 1.
 AdairColumbiaThursday and Friday Oct. 3-4.
 RussellJamestownMonday and Tuesday, Oct. 7-8.
 CaseyLibertyWednesday and Thurs., Oct. 9-10.
 HartHorse CaveMonday and Tuesday Oct. 14-15.
 BarrenGlasgowWednesday and Thurs., Oct 16-17.
 EdmonsonBrownsvilleSaturday and Monday, Oct. 19-21
 WarrenSmith's GroveTuesday.....Oct. 22.
 WarrenWoodburnWednesdayOct. 23.
 SimpsonFranklinThursday and Friday, Oct. 24-25.
 AllenScottsvilleSaturday and Monday, Oct. 26-28.

INSTITUTE DISTRICT No. 5.

Conducted by

J. B. Walker (Director).....Hopkinsville, Ky.
 S. J. Baldwin.....Talmadge, O.
 Geo. P. Rogers.....Smithland, Ky.

RowanMoreheadMonday and Tuesday, Aug. 19-20.
 CarterGraysonWednesday and Thursday, Aug. 21-22.
 GreenupGreenupFriday and Saturday, Aug. 23-24.
 BoydCatlettsburgMonday and Tuesday, Aug. 26-27.
 LawrenceLouisaWednesday and Thurs., Aug. 28-29.
 MartinInezFriday and Saturday, Aug. 30-31.
 JohnsonPaintsvilleMonday and Tuesday, Sept. 2-3.
 MagoffinSaylersvilleThursday and Friday, Sept. 5-6.
 FloydPrestonburgMonday and Tuesday, Sept. 9-10.
 PikePikesvilleWednesday and Thurs., Sept. 11-12.
 LetcherWhitesburgMonday and Tuesday, Sept. 16-17.
 KnottHindmanThursday and Friday, Sept. 19-20.
 PerryHazzardMonday and Tuesday, Sept. 23-24.
 LeslieHydenWednesday and Thurs., Sept. 25-26.
 ClayOneidaSaturday and Monday, Sept. 28-30.
 OwsleyBoonevilleWednesday and Thurs., Oct. 2-3.
 LeeBeattyvilleFriday and Saturday, Oct. 4-5.
 EstillIrvineMonday and Tuesday, Oct. 7-8.
 •BreathittJacksonWednesday and Thurs., Oct. 9-10.
 WolfeCamptonSaturday and Monday, Oct. 12-14.
 PowellStantonWednesday and Thurs., Oct. 16-17.
 MeniffeeFrenchburgSaturday and Monday, Oct. 19-21.
 MorganWest LibertyThursday and Friday, Oct. 24-25.
 ElliottSandy HookMonday and Tuesday, Oct. 28-29.

COUNTY.	PLACE.	DATE.	No. Days.	No. Sessions.	Aggregate Attendance	No. Lecturers Employed.
Carroll	Carrollton	Monday and Tuesday, Sept. 2-3	2	4	162	3
Gallatin	Warsaw	Wednesday and Thurs., Sept. 4-5	2	4	105	3
Owen	Owenton	Friday and Saturday, Sept. 6-7	2	3	186	3
Boone	Burlington	Monday and Tuesday, Sept. 9-10	2	5	298	3
Kenton	Independence	Wednesday & Thurs., Sept. 11-12	2	4	107	3
Grant	Williamstown	Friday and Saturday, Sept. 13-14	2	5	106	3
Scott	Georgetown	Monday and Tuesday, Sept. 16-17	2	5	73	3
Woodford	Versailles	Wednesday & Thurs., Sept. 18-19	2	---	---	---
Franklin	Forks of Elkhorn	Friday and Saturday, Sept. 20-21	2	---	---	---
Fayette	Lexington	Monday and Tuesday, Sept. 23-24	2	5	136	3
Clark	Winchester	Wednesday & Thurs., Sept. 25-26	2	5	340	3
Montgomery	Mt. Sterling	Friday and Saturday, Sept. 27-28	2	5	424	3
Bath	Owingsville	Mon. and Tues. Sept. 30-Oct. 1	2	5	97	3
Bourbon	Paris	Wednesday and Thurs., Oct. 2-3	2	4	69	3
Harrison	Cynthiana	Friday and Saturday, Oct. 4-5	2	5	353	3
Pendleton	Falmouth	Monday and Tuesday, Oct. 7-8	2	4	155	3
Campbell	Alexandria	Wednesday and Thurs., Oct. 9-10	2	6	173	3
Bracken	Brooksville	Friday and Saturday, Oct. 11-12	2	5	264	3
Robertson	Mt. Olivet	Monday and Tuesday, Oct. 14-15	2	5	257	3
Mason	Maysville	Thursday & Friday, Oct. 17-18	2	5	108	3
Lewis	Vanceburg	Saturday & Monday, Oct. 19-21	2	5	385	3
Fleming	Flemingsburg	Wednesday & Thurs., Oct. 23-24	2	5	260	3
Nicholas	Carlisle	Friday and Saturday, Oct. 25-26	2	5	387	3

COUNTY.	PLACE.	DATE.	No. Days.	No. Sessions.	Aggregate Attendance.	No. Lecturers Employed.
Harlan	Harlan	Monday and Tuesday, Aug. 19-20--	2	4	160	3
Bell	Pineville	Thursday and Friday, Aug. 22-23--				
Knox	Barboursville	Saturday & Monday, Aug. 24-26--	2	4	155	3
Whitley	Williamsburg	Tuesday & Wednesday, Aug. 27-28--	2	4	81	3
Laurel	London	Thursday & Friday, Aug. 29-30--	2	5	570	3
Clay	Manchester	Monday and Tuesday, Sept. 2-3--	2	5	173	3
Jackson	McKee	Friday and Saturday, Sept. 6-7--	2	5	220	3
Rock Castle	Mt. Vernon	Tuesday and Wednesday, Sept. 10-11--	2	4	130	3
Pulaski	Somerseset	Friday and Saturday, Sept. 13-14--	2	5	175	3
Wayne	Monticello	Monday and Tuesday, Sept. 16-17--	2	4	64	3
Clinton	Albany	Thursday & Friday, Sept. 19-20--	2	4	90	3
Cumberland	Burksville	Monday & Tuesday, Sept. 23-24--	2	5	305	3
Monroe	Tompkinsville	Thursday & Friday, Sept. 26-27--	2	5	500	3
Metcalf	Edmonton	Monday & Tuesday, Sept. 30-Oct. 1--	2	7	360	3
Adair	Columbia	Thursday and Friday, Oct. 3-4--	2	4	95	3
Russell	Jamestown	Monday and Tuesday, Oct. 7-8--	2	3	60	2
Casey	Liberty	Wednesday and Thursday, Oct. 9-10--	2	4	57	2
Hart	Horse Cave	Monday and Tuesday, Oct. 14-15--	2	2	20	3
Barren	Glasgow	Wednesday & Thursday, Oct. 16-17--	2	4	100	3
Edmondson	Brownsville	Saturday and Monday, Oct. 19-21--	2	4	565	3
Warren	Smith's Grove	Tuesday, Oct. 22--	2	4	365	3
Warren	Woodburn	Wednesday, Oct. 23--	2	4	365	3
Simpson	Franklin	Thursday and Friday, Oct. 24-25--	2	3	95	3
Allen	Scottsville	Saturday and Monday, Oct. 26-28--	2	4	200	3

COUNTY.	PLACE.	PLACE.	No. Days.	No. Sessions.	Aggregate Attendance.	No. Lecturers Employed.
Rowan	Morehead	Monday and Tuesday, Aug. 19-20.	2	4	90	3
Carter	Grayson	Wednesday and Thurs., Aug. 21-22.	2	3	80	3
Greenup	Greenup	Friday and Saturday, Aug. 23-24.	2	4	59	3
Boyd	Catlettsburg	Monday and Tuesday, Aug. 26-27.	2	3	23	3
Lawrence	Louisa	Wednesday and Thurs., Aug. 28-29.	2	3	46	3
Martin	Inez	Friday and Saturday, Aug. 30-31.	2	4	34	3
Johnson	Paintsville	Monday and Tuesday, Sept. 2-3.	2	4	81	2
Magoffin	Salersville	Thursday and Friday, Sept. 5-6.	2	5	129	2
Floyd	Prestonburg	Monday and Tuesday, Sept. 9-10.	2	4	48	2
Pike	Pikesville	Wednesday and Thurs., Sept. 11-12.	2	4	133	2
Letcher	Whitesburg	Monday and Tuesday, Sept. 16-17.	2	4	174	2
Knott	Hindman	Thursday and Friday, Sept. 19-20.	2	5	63	2
Perry	Hazard	Monday and Tuesday, Sept. 23-24.	2	2	44	2
Leslie	Hyden	Wednesday and Thurs., Sept. 25-26.	2	4	108	2
Clay	Oneida	Saturday and Monday, Sept. 28-30.	2	3	65	2
Owsley	Booneville	Wednesday and Thurs., Oct. 2-3.	2	5	67	2
Lee	Beattyville	Friday and Saturday, Oct. 4-5.	2	4		
Estill	Irvine	Monday and Tuesday, Oct. 7-8.	2			
Breathitt	Jackson	Wednesday and Thurs., Oct. 9-10.	2	4	34	2
Wolfe	Campton	Saturday and Monday, Oct. 12-14.	2	4	35	2
Powell	Stanton	Wednesday and Thurs., Oct. 16-17.	2	4		
Menifee	Frenchburg	Saturday and Monday, Oct. 19-21.	2			
Morgan	West Liberty	Thursday and Friday, Oct. 24-25.	2	3	97	2
Elliott	Sandy Hook	Monday and Tuesday, Oct. 28-29.	2			

COUNTY.	PLACE.	DATE.	No. Days.	No. Sessions.	Aggregate Attendance.	No. Lecturers Employed.
McLean	Calhoun	Monday and Tuesday, Aug. 26-27	2	2	125	3
Ohio	Hartford	Thursday & Friday, Aug. 29-30	2	4	75	3
Butler	Morgantown	Monday and Tuesday, Sept. 2-3	2	4	75	3
Grayson	Leitchfield	Wednesday and Thurs., Sept. 4-5	2	4	113	3
Hardin	E. Town	Friday and Saturday, Sept. 6-7	2	5	220	3
LaRue	Hodgenville	Monday and Tuesday, Sept. 9-10	2	2	60	3
Jefferson	Anchorage	Wednesday & Thurs., Sept. 11-12				
Bullitt	Shepherdsville	Friday and Saturday, Sept. 13-14	2	4	80	3
Nelson	Boston	Monday and Tuesday, Sept. 16-17				
Washington	Springfield	Wednesday & Thurs., Sept. 18-19	2	4	65	3
Marion	Lebanon	Friday and Saturday, Sept. 20-21	2	4	75	3
Taylor	Campbellsville	Monday and Tuesday, Sept. 23-24	2	5	175	3
Green	Greensburg	Wednesday & Thurs., Sept. 25-26	2	4	90	3
Ityle	Danville	Saturday & Monday, Sept. 28-30	2	4	90	3
Lircoln	Stanford	Tuesday & Wednesday, Oct. 1-2	2	5	110	3
Garrard	Lancaster	Thursday and Friday, Oct. 3-4	2	2	50	3
Madison	Richmond	Saturday and Monday, Oct. 5-7	2	4	135	3
Jessamine	Nicholasville	Tuesday & Wednesday, Oct. 8-9	2	4	75	3
Mercer	Harrodsburg	Thursday & Friday, Oct. 10-11	2	4	25	3
Anderson	Lawrenceburg	Saturday and Monday, Oct. 12-14	2	4	36	3
Spencer	Taylorsville	Tuesday & Wednesday, Oct. 15-16	2	5	210	3
Shelby	Shelbyville	Thursday and Friday, Oct. 17-18	2	4	60	3
Henry	New Castle	Saturday and Monday, Oct. 19-21	2	4	100	3
Oldham	LaGrange	Tuesday & Wednesday, Oct. 22-23	2	4	40	3
Trimble	Bedford	Thursday & Friday, Oct. 24-25	2	4	110	3

COUNTY.	PLACE.	DATE.	No. Days.	No. Sessions.	Aggregate Attendance.	No. Lecturers Employed.
Meade	Brandenburg	Monday and Tuesday, Aug. 26-27	2	4	90	3
Breckenridge	Hardinsburg	Wednesday & Thurs., Aug. 28-29	2	5	725	3
Hancock	Hawesville	Friday and Saturday, Aug. 30-31	2	4	190	3
Daviess	West Louisville	Monday and Tuesday, Sept. 2-3	2	5	1000	3
Henderson	Corydon	Wednesday & Thurs., Sept. 4-5	2	5	400	3
Union	Morganfield	Friday and Saturday, Sept. 6-7	2	4	280	3
Webster	Dixon	Monday and Tuesday, Sept. 9-10	4	9	1000	3
Crittenden	Marion	Wednesday & Thurs., Sept. 11-12	2	2	55	3
Caldwell	Princeton	Friday and Saturday, Sept. 13-14	2	3	102	3
Lyon	Kuttawa	Monday and Tuesday, Sept. 16-17	2	4	105	3
McCracken	Maxon's Mills	Wednesday & Thurs., Sept. 18-19	2	4	230	3
Marshall	Benton	Friday and Saturday, Sept. 20-21	2	2	40	3
Calloway	Murray	Monday and Tuesday, Sept. 23-24	2	4	225	3
Livingston	Duley Bluff Church	Thursday and Friday, Sept. 26-27	2	4	189	3
Graves	Mayfield	Mon. and Tues. Sept. 30-Oct. 1	2	4	440	3
Fulton	Hickman	Thursday and Friday, Oct. 3-4	2	5	88	3
Hickman	Clinton	Saturday and Monday, Oct. 5-7	2	4	145	3
Carlisle	Bardwell	Tuesday & Wednesday, Oct. 8-9	2	2	68	3
Ballard	Wickliffe	Thursday and Friday, Oct. 10-11	2	4	70	3
Trigg	Cadiz	Monday and Tuesday, Oct. 14-15	2	2	30	3
Christian	Church Hill	Wednesday & Thurs., Oct. 16-17	2	4	210	3
Hopkins	Madisonville	Friday and Saturday, Oct. 18-19	2	2	30	3
Todd	Elkton	Monday and Tuesday, Oct. 21-22	2	4	73	3
Logan	Russellville	Wednesday & Thurs., Oct. 23-24	2	4	98	3
Muhlenburg	Greenville	Friday and Saturday, Oct. 25-26	2	4	93	3

OFFICERS AND COMMITTEES
OF THE
Association of Farmers' Institute Workers

President.—E. A. Burnett, Lincoln, Nebr.

Vice-President.—C. A. Cary, Auburn, Ala.

Secretary-Treasurer.—John Hamilton, Washington, D. C.

Executive Committee.—The President and the Secretary-Treasurer, ex officio;
F. H. Hall, Aurora, Ill.; Franklin Dye, Trenton, N. J.; G. A. Putnam,
Toronto, Ontario.

STANDING COMMITTEES.

Institute Organization and Methods.—F. H. Rankin, Urbana, Ill., chairman;
A. M. Soule, Blacksburg, Va.; James Murray, Regina, Canada.

Institute Lecturers.—W. C. Latta, Lafayette, Ind., chairman; George McKerr-
row, Madison, Wis.; W. L. Calvert, Columbus, Ohio.

Cooperation with Other Educational Agencies.—Kenyon L. Butterfield, Amherst,
Mass., chairman; Hubert Vreeland, Frankfort, Ky.; Tait Butler, Raleigh,
N. C.

Movable Schools of Agriculture.—G. C. Creelman, Guelph, Canada, chairman;
A. L. Martin, Harrisburg, Pa.; F. E. Dawley, Fayetteville, N. Y.

Boys' and Girls' Institutes.—L. R. Taft, Agricultural College, Mich., chairman;
H. T. French, Moscow, Idaho; J. W. Carson, College Station, Tex.

Women's Institutes.—Miss Blanche R. Maddock, Guelph, Ontario, chairman;
Mrs. I. S. Raymond, Sidney, Ill.; Mrs. Helen Wells, Syracuse, N. Y.

Special Committee on Legislation.—Hon. N. B. Critchfield, Harrisburg, Pa.,
chairman; Prof. L. R. Taft, Agricultural College, Mich.; Fred H. Rankin,
Urbana, Ill.

OFFICERS IN CHARGE OF FARMERS' INSTITUTES IN THE UNITED STATES AND CANADA.

Alabama.—C. A. Cary, professor of veterinary science, Polytechnic Institute, Auburn; G. W. Carver, director agricultural experiment station, Tuskegee Institute.

Alaska.—C. C. Georgeson, agricultural experiment station, Sitka.

Arizona.—R. H. Forbes, director agricultural experiment station, Tucson.

Arkansas.—W. G. Vincenheller, director agricultural experiment station, Fayetteville.

California.—E. J. Wickson, superintendent of farmers' institutes, University of California, Berkeley; D. T. Fowler, conductor of farmers' institutes in central and northern California, Berkeley; J. B. Neff, conductor of farmers' institutes in southern California, Anaheim; W. T. Clark, assistant superintendent of farmers' institutes, Berkeley.

Colorado.—W. L. Carlyle, dean of school of agriculture, State Agricultural College, Fort Collins; Fred P. Johnson, superintendent of farmers' institutes, Denver.

Connecticut.—James F. Brown, secretary State board of agriculture, North Stonington; J. G. Schwink, Jr., secretary Connecticut Dairymens' Association, Meriden; H. C. C. Miles, secretary Connecticut Pomological Society, Milford.

Delaware.—Wesley Webb, secretary board of agriculture, Dover; H. Hayward, director agricultural experiment station and superintendent of institutes for Newcastle County.

Florida.—R. W. Clothier, professor of agriculture, University of Florida, Gainesville.

Georgia.—H. C. White, president State College of Agriculture, Athens; Harvie Jordan, field agent in charge of farmers' institutes, 920 Empire Building, Atlanta.

Hawaii.—J. G. Smith, agricultural experiment station, Honolulu.

Idaho.—H. T. French, director agricultural experiment station, Moscow.

Illinois.—Frank H. Hall, secretary Illinois farmers' institutes, Aurora.

Indiana.—W. C. Latta, professor of agriculture in Purdue University, Lafayette.

- Iowa*.—J. C. Simpson, secretary State board of agriculture, Des Moines.
- Kansas*.—J. H. Miller, superintendent farmers' institutes, Manhattan.
- Kentucky*.—Hubert Vreeland, commissioner of agriculture, Frankfort.
- Louisiana*.—Charles Schuler, commissioner of agriculture and immigration, Baton Rouge.
- Maine*.—A. W. Gilman, commissioner of agriculture, Augusta.
- Maryland*.—W. L. Amoss, director farmers' institutes, Benson.
- Massachusetts*.—J. L. Ellsworth, secretary State board of agriculture, Boston.
- Michigan*.—L. R. Taft, superintendent of farmers' institutes, agricultural college.
- Minnesota*.—O. C. Gregg, director farmers' institutes, Lynd.
- Mississippi*.—E. R. Lloyd, director farmers' institutes, agricultural college.
- Missouri*.—George B. Ellis, secretary State board of agriculture, Columbia.
- Montana*.—F. B. Linfield, director agricultural experiment station, Bozeman.
- Nebraska*.—E. A. Burnett, director agricultural experiment station, Lincoln; Val Keyser, assistant superintendent farmers' institutes, Fairbury, R. F. D. 5.
- Nevada*.—J. E. Stubbs, president Nevada State University, Reno.
- New Hampshire*.—N. J. Bachelder, secretary State board of agriculture, Concord.
- New Jersey*.—Franklin Dye, secretary State board of agriculture, Trenton.
- New Mexico*.—John D. Tinsley, superintendent farmers' institutes, agricultural college.
- New York*.—F. E. Dawley, director farmers' institutes, Fayetteville.
- North Carolina*.—S. L. Patterson, commissioner of agriculture, Raleigh; Tait Butler, professor veterinary science, College of Agriculture and Mechanic Arts, field agent, Raleigh.
- North Dakota*.—E. E. Kaufman, superintendent of farmers' institutes, Fargo.
- Ohio*.—T. L. Calvert, secretary State board of agriculture, Columbus.
- Oklahoma*.—C. A. McNabb, secretary State board of agriculture, Guthrie.
- Oregon*.—J. Withycombe, director agricultural experiment station, Corvallis.
- Pennsylvania*.—A. L. Martin, deputy secretary of agriculture, Harrisburg.

82 *Seventeenth Biennial Report Bureau of Agriculture.*

Porto Rico.—D. W. May, agricultural experiment station, Mayaguez.

Rhode Island.—John J. Dunn, secretary State board of agriculture, Providence.

South Carolina.—J. N. Harper, director agricultural experiment station, Clemson College.

South Dakota.—A. E. Chamberlain, superintendent of farmers' institutes, Howard.

Tennessee.—W. W. Oglivie, commissioner of agriculture, Nashville.

Texas.—J. W. Carson, director farmers' institutes, College Station.

Utah.—P. A. Yoder, director agricultural experiment station, Logan.

Vermont.—Geo. Aitken, secretary State board of agriculture, Woodstock.

Virginia.—G. W. Koener, commissioner of agriculture, Richmond; A. M. Soule, director agricultural experiment station and secretary Virginia State farmers' institute, Blacksburg.

Washington.—E. A. Bryan, president Agricultural College and School of Science, Pullman; E. E. Elliott, professor of agriculture, Washington Agricultural College, field agent in charge of institutes, Pullman.

West Virginia.—H. E. Williams, superintendent of farmers' institutes, Charleston.

Wisconsin.—G. B. McKerrow, director farmers' institutes, Madison.

Wyoming.—B. C. Buffum, director agricultural experiment station, Laramie.

DIRECTOR OF FARMERS' INSTITUTES OF CANADA.

Alberta.—H. A. Craig, superintendent of farmers' institutes, Edmonton.

British Columbia.—J. R. Anderson, deputy minister of agriculture, Victoria.

Manitoba.—J. W. Black, deputy minister of agriculture, Winnipeg.

New Brunswick.—Thos. A. Peters, deputy minister of agriculture, Fredericton.

Nova Scotia.—B. W. Chipman, secretary of agriculture, Halifax.

Ontario.—G. A. Putnam, director of farmers' institutes, Toronto.

Prince Edward Island.—Theo. Ross, secretary of agriculture, Charlottetown.

Quebec.—G. A. Gigault, deputy minister of agriculture, Quebec.

Saskatchewan.—James Murray, superintendent fairs and institutes, Regina.

SECRETARIES OF FARMERS' CLUBS ORGANIZED

BY THE

COMMISSIONER OF AGRICULTURE.

Adair County, A. G. Todd, Columbia.
Allen County, F. G. Dent, Scottsville.
Anderson County, J. S. Cooke, McBrayer.
Ballard County, Jake Corbett, Wickliffe.
Barren County, A. E. Ferguson, Cave City, R. F. D.
Bath County, Thos. H. Brown, Owingsville.
Bell County, P. Woolum, Bingham.
Boone County, W. H. Clayton, Hebron.
Bourbon County, A. S. Thompson, Paris.
Boyd County, B. B. Brown, Catlettsburg.
Boyle County, D. C. Bryant, Danville.
Bracken County, Wm. Huffman, Brooksville.
Breathitt County, W. D. Bach, Jackson.
Brooks County, H. M. Bead, Hardinsburg.
Bullitt County, Jasper Pearl, Shepherdsville.
Butler County, A. Thatcher, Morgantown.
Caldwell County, T. E. Richey, Princeton.
Calloway County, C. D. Holt, Murray.
Campbell County, E. M. Riley, Alexandria.
Carlisle County, R. H. Brown, Bardwell.
Carroll County, Geo. S. Lee, Carrollton.
Carter County, Frank Powers, Grayson.
Casey County, Henry Thomas, Liberty.
Christian County, Miss Edna Adams, Hopkinsville.
Christian County No. 2, Mrs. Robt. Wood, Hopkinsville.
Clark County, C. R. White, Winchester, R. F. D. No. 1.
Clay County, J. R. Burchell, Manchester.
Clay County No. 2, H. L. McMurry, Oneida.
Clinton County, T. H. Dyer, Albany.
Crittenden County, C. W. Fox, Marion.
Cumberland County, H. K. Alexander, Burksville.
Daviess County, W. G. Riney, West Louisville.
Edmondson County, Jno. L. Cayton, Chalbyiate.
Elliott County, J. W. Rose, Sandy Hook.
Estill County, Lewis Wilson, Irvine.
Fayette County, J. D. Clark, Lexington.
Fleming County, L. C. Demaree, Johnson Junction.
Floyd County, H. F. Patton, Prestonburg.
Franklin County, Sam Mason, Jett Station.
Fulton County, John A. McClure, Hickman.

Gallatin County, Jas. H. McDanell, Warsaw.
 Garrard County, J. M. Farra, Lancaster.
 Grant County, Bruce H. Franks, Williamstown.
 Graves County, T. J. Gregory, Mayfield.
 Grayson County, R. L. Moorman, Leitchfield.
 Green County, W. H. Graham, Greensburg.
 Greenup County, J. D. Biggs, Greenup.
 Hancock County, James Patterson, Hawesville.
 Hardin County, Wm. D. Brown, Colesburg.
 Harlan County, J. S. McKnight, Baxter.
 Harrison County, Z. W. Lee, Cynthia.
 Hart County, T. T. Page, Horse Cave.
 Henderson County, James N. Banks, Henderson.
 Henry County, S. T. Douthit, New Castle.
 Hickman County, C. C. Mahan, Clinton.
 Hopkins County, J. F. Story, Madisonville.
 Jackson County, D. G. Collier, McKee.
 Jackson County No. 2, Wm. Morris, Waneta.
 Jefferson County, Chas. Hunsinger, Buechel.
 Jessamine County, James Steer, Nicholasville.
 Johnson County, Milton McDowell, Monilla.
 Kenton County, E. B. Willson, Scott.
 Knott County, H. H. Smith, Hindman.
 Knox County, F. R. Barner, Barbourville.
 LaRue County, Gus Oversen, Hodgenville.
 Laurel County, A. R. Dyche, London.
 Lawrence County, John G. Burns, Louisa.
 Lee County, D. B. Maloney, Beattyville.
 Leslie County, Felix G. Roberts, Hyden.
 Letcher County, N. W. Webb, Whitesburg.
 Lewis County, Henry C. Myers, Vanceburg.
 Lincoln County, W. H. Shanks, Stanford.
 Livingston County, Frank Padon, Joy.
 Logan County, J. N. Flowers, Russellville.
 Lyon County, Jno. L. Smith, Kuttawa.
 Madison County, Jesse Cobb, Richmond.
 Magoffin County, H. F. Fairchild, Salyersville.
 Marion County, C. R. Van Meter, Lebanon.
 Marshall County, W. G. Miller, Benton.
 Martin County, C. C. Cline, Inez.
 Mason County, Shelby Batterman, Mayslick.
 Meade County, N. B. McDowell, Ekron.
 Menifee County, C. F. Ringo, Rothwell.
 Mercer County, Jno. G. Pulliam, Harrodsburg.
 Metcalf County, R. B. DeMunburn, Edmonton.
 Metcalf County, No. 2, E. D. Isenberg, Summershade.
 Monroe County, A. H. Deckard, Gamaliel.
 Monroe County, No. 2, J. T. Woods, Boles.

Montgomery County, Ben. W. Hall, Mt. Sterling.
Morgan County, H. L. Burnes, West Liberty.
Muhlenberg County, J. G. Barkley, Greenville.
McCracken County, W. F. Ware, Maxon Mills.
McLean County, Walter Atherton, Livia, R. F. D. No. 3.
Nelson County, No. 1, H. C. Lovelace, Boston.
Nelson County No. 2, Wallace Brown, Bardstown.
Nicholas County, J. W. Dalzelle, Jr., Carlisle.
Ohio County, A. B. Tichenor, Mantanza.
Oldham County, J. B. Morris, LaGrange.
Owen County, J. W. Connelly, Owenton.
Owsley County, B. J. Meyers, Booneville.
Pendleton County, M. F. Monroe, Falmouth.
Perry County, L. P. Grigsby, Grigsby.
Pike County, W. H. Flanery, Pikeville.
Powell County, J. D. Atkinson, Stanton.
Pulaski County, W. T. Otley, Somerset.
Robertson County, James Duncan, Mt. Olivet.
Rockcastle County, M. G. Fish, Mt. Vernon.
Rowan County, S. R. Rhoder, Morehead.
Russell County, J. M. Meadows, Jamestown.
Scott County, F. M. Thomasson, Georgetown.
Shelby County, G. W. Waddy, Waddy.
Shelby County No. 2, W. C. Coleman, Shelbyville.
Simpson County, J. W. Yokeley, Franklin.
Spencer County, J. W. Dixon, Taylorsville.
Taylor County, J. Hugh Chandler, Campbellsville.
Todd County, Jno. A. Goodman, Elkton.
Trigg County, J. L. Grinter, Cadiz.
Trimble County, James Sibley, Sulphur.
Union County, T. E. Taylor, Morganfield.
Warren County, O. A. Roup, Bowling Green.
Washington County, B. B. Leachman, Springfield.
Wayne County, Frank Rankin, Rankin.
Webster County, J. F. Porter, Dixon.
Webster County No. 2, E. T. Winstead, Slaughtersville.
Whitley County, H. C. King, Williamsburg.
Wolfe County, James Drake, Campton.
Woodford County, W. A. Cox, Versailles.

age.

41

42

43

45

47

56

58

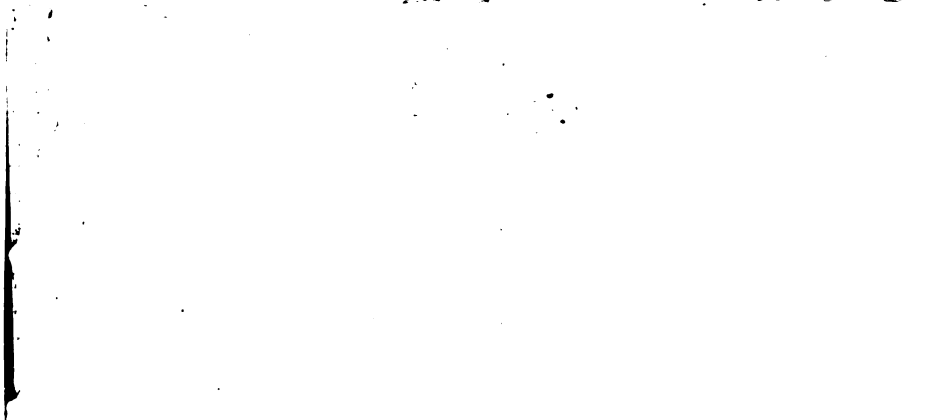
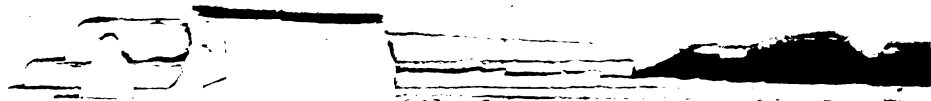
59

10

12

14

15



CONTENTS.

	Page.
Introduction	41
Physiographic features	42
Classification of land	43
Transportation	45
The Forest:	
Present stand	47
Forest descriptions	56
Management	58
Description of species	59
Condition by counties	75
Timber industries:	
Lumbering	91
Hewn ties	96
Stave industry	98
Other forest industries	102
Summary	104
Other industries dependent on the forests:	
Agriculture	107
Mining	108
Fire protection	110
Protection from stock	112
Planting	114
Taxation	115
Recommendations	116
Appendix:	
List of trees and shrubs noted in the region	118
Map insert:	

INTRODUCTION.

In 1899 Kentucky cut 734,000,000 board feet of hardwood lumber. In 1906, the cut had fallen to 615,000,000 board feet, a decrease of over 16 per cent in the past eight years. In the same period the cut of yellow poplar has fallen off over 37 per cent. This reduction is in spite of the fact that during the same time prices of hardwoods have advanced on an average 20 per cent, and the demand has increased accordingly. These figures mean that Kentucky, which is one of the chief hardwood producing States in the Union, and is still the first State in the production of yellow poplar, has a rapidly diminishing supply of timber.

Realizing the importance of the forests to the welfare of the State and the necessity of some action for their perpetuation, the Kentucky Legislature created in 1906, a State Board of Agriculture, Forestry and Immigration. It has an annual appropriation of \$2,000 to be used for the advancement of the forest interests of the State.

The following winter this Board asked and received the active co-operation of the Forest Service of the United States Department of Agriculture in a study of forest conditions of the State. An agreement was entered into by which the Forest Service promised to apportion a sum equal to that appropriated by the State, making in all a total of \$4,000 available for this work. This agreement outlined the proposed study as follows:

"The Forest Service shall make investigations and study upon the ground, and shall report upon forest resources and conditions in the State of Kentucky, the results of which investigation shall be embodied in a report which shall include the following:

1. A map of the State showing the distribution of the forest.
2. A description of the various types of forest as to composition and condition.
3. An estimate of the standing timber, by counties.

4. Study of the methods of logging for the purpose of discovering practical improvements which shall maintain the producing power of the forest lands in the State.

5. Study of forest fires and their effect upon the forest and the most advisable means of prevention.

6. The market for the more important commercial trees, with particular reference to stumpage values.

Said report shall be as complete as the available funds will permit, and shall include recommendations for private owners in the handling of their lands to maintain and improve the forest and shall also contain a recommendation for State forest policy and a State forest law, if advisable."

On account of the extreme importance of the timber business to the people of eastern Kentucky, it was decided, after consultation with the Board, to commence the study in the extreme eastern portion of the State, taking up the study by counties and watersheds, completing each as far as practicable before going on to the adjoining territory.

The study on two watersheds has been completed, namely, Big Sandy river and Little Sandy river, the latter including Tygart creek. In two counties the study has spread over onto the heads of two other rivers, the Kentucky and the Cumberland, but most of the area in these latter watersheds will be covered by subsequent reports.

2. PHYSIOGRAPHIC FEATURES.

The part of the State covered in the course of this study is the eastern and northern section of the mountain region comprising the counties of Pike, Letcher, Knott, Floyd, Martin, Johnson, Lawrence, Boyd, Elliott, Carter, and Greenup.

This area is drained by the Big Sandy river, which also forms the boundary line between Kentucky and West Virginia, by the Little Sandy and Tygart creeks, and by the North Fork of the Kentucky river. A small portion of Letcher county is also drained by the Poor Fork of the Cumberland river.

The country as a whole slopes gently north toward the Ohio river. The elevations of the ridges in the southern counties is from 2,000 to 3,500 feet above sea level, while the beds of the

streams are from 1,000 to 2,000 feet below the crests of the ridges. In the northern counties the elevation of the ridges is from 800 to 1,000 feet, and the beds of the streams are only 300 to 400 feet below the crests of the ridges.

This difference between ridge level and stream level determines the topography of the region. The ridges are sharp, the slopes very steep and the coves are very narrow in the upper end of the region. As one comes north, however, the bottoms widen and the slopes become more moderate.

As in the whole of this Cumberland Plateau region, the rocks are all sedimentary, and the strata horizontal, the valleys and ridges all having been formed by erosion and not by the folding of the earth's crust, as in the formations to the eastward. Coal is found in seams of varying thickness, underlying the greater part of the region. Sandstones and shales predominate, so that the soils vary from sandy to clay loam. Owing to the steepness of the hillsides erosion is very serious on cleared land, especially on the sandy soils. On the shaly soils erosion is less, but here landslides are frequent and often seriously damage cleared fields and even forested areas, though these latter rarely slide unless undermined to some extent by streams, roads, or railroads.

The soil of the region is quite productive when first cleared up, but after a few crops have been taken off, it gets badly washed and impoverished, and is therefore generally temporarily or permanently abandoned.

CLASSIFICATION, OWNERSHIP, AND VALUATION OF LAND.

As a rule land throughout this region is held in fee simple in small bodies of from 10 to 500 acres by the citizens themselves, who live on their own land, usually cultivating enough themselves with the help of their families to raise corn and vegetables for their own use, at least for the greater part of the year. For groceries, clothing and other cash necessities, they depend on their day labor and their woodland.

Because of this individual ownership, the proportion of cleared to forest land is practically the same for nearly every farm, and

consequently, for the total area of the county. By cleared land is meant all land which has been cleared of forest growth and on which crops at some time have been grown.

The division of the land into forest and cleared is made necessary as illustrating present conditions, but the economic side must not be lost sight of. Much of the land that has been cleared for crops is really better adapted to the growth of forest, while some of the land that is now in forest growth can be cleared up and more profitably used in the growth of agricultural crops. This economic division of land into absolute forest land and land more profitable for other uses has not been gone into in detail, but it is estimated that in this part of Kentucky at least 50 per cent of the land is absolute forest land. Much of the land that is now cleared and wasted could be supporting a profitable young forest, while a great deal of bottom land that was once cleared and is now supporting a meagre growth of worthless small trees and shrubs, could, under intensive methods, produce excellent agricultural crops. This division of the land, along scientific and practical lines should be kept in mind in all legislative action, as it is a question for State forest policy more than for private land owners, who often have to make the best of what land they have and so sometimes cannot avoid the clearing of areas that should really be left in forest.

All of the land in these eleven counties, however, is not in the hands of local citizens. In Boyd, Carter, and Greenup much of the land has been held by the various iron companies, though lately a good deal has been sold off in small lots to the settlers. In the five southern counties a large amount of land is owned in fee simple by either coal, lumber, or speculation companies. In these counties also, many of the farmers have disposed of their mineral rights to coal companies, while they still retain their title to the surface. These mineral rights often include the use of all timber on the land below 12 inches in diameter which may be necessary to the working of the mines.

The assessed value of land is comparatively low throughout the region, varying from \$3.00 to \$6.00 per acre, including all improvements, with the exception of Boyd county, which on account of the inclusion of two large towns, has an average valuation of \$12.00 per acre. Ordinary forest land is not valued at

more than \$2.00 to \$3.00 per acre, and even well-timbered tracts are rarely valued above \$5.00 per acre. The tax rate is comparatively low, varying from one to one and one-half per cent. This comparatively low rate of taxation renders possible the conservative management of the forests, which is out of the question where a high rate prevails.

TRANSPORTATION.

Before the advent of the railroad the main artery of transportation for the area covered by this report was the Big Sandy river. Flat bottom boats, propelled either by steam or by hand, were used as common carriers while the forest products were floated as they are to-day. These boats operated from the Ohio up as far as Pikeville. To facilitate river navigation the Federal Government has built two needle dams, one at Catlettsburg and one at Louisa. These dams, with their locks serve to deepen the river between and above them. The dam at Louisa has lately been partially destroyed by flood. The main detriment to river navigation is the sand, which is constantly shifting, thereby causing the channel to change. The needle type of dam was installed in order that log-rafts could pass over the dams during high water on their way to the Ohio, and in order that frequent flushing could be obtained and the sand removed in that way. At the present time these dams are of little use, since the river is used chiefly for rafting logs, but it is hoped that with the development of mining in this region the river will again be used as a waterway.

At the present time the railroads are the chief means of transportation. On the east bank of the Big Sandy river and Tug Fork is the Norfolk & Western; on the west bank of the Big Sandy and Louisa Fork is a branch of the Chesapeake and Ohio; running east and west through Boyd and Carter counties is the Lexington division of the same road; and running north and south in Carter and Greenup counties is the Eastern Kentucky. Owing to lack of competition and the fact that most freight is shipped out and little shipped in, freight rates are high. With the advent of competing lines now projected and the repair and extension of the river improvements, it is fair to expect lower rates in the future.

At the present time the river depends almost entirely for its supply of logs upon the smaller streams, many of which are getting too filled up with sand to form a profitable means of transportation. The railroads, on the other hand, depend upon the county roads for their supplies of forest products. The roads in this district are as a rule in very poor shape, necessitating the hauling of very small loads and a very heavy expense for wagons and draft animals. The roads, as would be expected, are better in the more level, older and more settled counties. Boyd county has many well-made roads and is even macadamizing some of the main roads for a few miles out of Ashland. Lawrence county's roads are in a fair condition, a road machine being used to some extent, while Johnson county is co-operating with the U. S. Bureau of Road Investigations in the building of a sample length of macadam road, which will be a fine object lesson in the value of good roads. But even in these counties the average road leaves much to be desired. Higher up the Big Sandy river the roads become poorer, and in some seasons are quite impassable.

In many thickly settled districts every available bit of valley land is needed for agriculture, especially in the upper part of the Big Sand Valley, and the roads are relegated to the water courses. These creek roads are very rough and often impassable because of heavy washouts, and at no time can anything but very light loads be hauled over them. Many farmers use only sleds to do their hauling because wagons would be of little use without fair roads.

The county officials are allowed very great discretion in the enforcement of the road laws. In counties where the people are indifferent or opposed to the construction and maintenance of an adequate road system there is little work done on the roads. A change of the laws is not needed, at any rate not at present, nor can the county officials be held chiefly responsible for the lamentable condition of the public roads in some counties. The people themselves are responsible. As soon as they wake up to the realization that better roads are not only needed but are absolutely necessary to the prosperity and advancement of the county they can start on the work of improvement even under the present system, as several of the counties have already done.

A vigorous campaign for good roads would undoubtedly result in less expense in transporting forest products in this region, and

would increase the profits of land owners and lumbermen. With roads to make the forest lands accessible, better care of the forests would be possible, for logs from the less perfect trees, and trees of the less desirable species could then be handled; the promising small trees would be left with plenty of room to grow, and the proportion of the proper species in the future stand lessened. It is recommended that the State authorities give every encouragement to the movement for good roads in these eleven counties.

FOREST CONDITIONS.

Present Stand.

The forests of the mountain region of eastern Kentucky belong to the great Appalachian hardwood region, except the northern and western part of Greenup and Carter counties, where it grades into the central hardwood region. At one time some of the finest hardwood forests of the world covered this part of the State, but with the gradual influx of settlers, the timber along all waterways has been gradually cleared for agriculture.

Owing to the absence of markets and means of transportation, a great part of the timber removed in clearing was unavoidably destroyed. Much more, taken from the present forest area, has been marketed at little or no profit. Conditions, however, have now greatly changed, so that the standing timber is one of the most valuable assets of the farmer.

At the present time about 62 per cent of the entire area is wooded, giving a total of 1,600,000 acres in forest in the eleven counties under consideration. Estimates of the amount of standing timber have been obtained for each creek watershed in the region, together with the annual output of all forest products. These estimates and output figures have been put into tables so that the two may be compared and thus aid in drawing some conclusions as to the life of the timber industries in the region. This comparison alone will show the necessity for adopting more conservative methods of exploitation as well as the advisability of adequately caring for the young forests.

From table 1 it will be seen that the total stand of timber 12 inches and over in diameter, breasthigh, on this area is estimated

at about 6,000,000,000 board feet, or an average stand of less than 4 M. feet B. M., per acre. A large proportion of the whole area will average less than 1 M. feet B. M. per acre. These stands of scattered trees do not contain very much merchantable timber even for portable mills, for they have been so closely culled over that there is very little timber left that will yield anything but second-class ties.

The virgin forest varies from 7 M. to 10 M. feet per acre, or even more, so it will be seen that throughout the region over half of the timber has been taken off from what is now forest land.

Table 3.—Present annual output of lumber in M. ft. board measure by counties and species.

COUNTY	White Oak	Chestnut Oak	Black Oak	Hickory	Pine	Poplar	Beech	Walnut	Hemlock	Linden	Chestnut	Maple	Ash	Gum	Total
Greenup	2,100	700	2,450	350	350	350					700				9,000
Boyd	2,395	900	87	125	20	873				10					4,410
Carter	849	293	205		100	147	239		118			9			1,960
Elliott	700	300	100		100	200			100						1,500
Lawrence	1,560	540	324		520	276		20	50		50	50			3,390
Johnson	3,870	1,935	516		34	264					50				6,666
Martin	2,300	500	500												3,300
Floyd	4,300	335	40	325		1,018	10	32		225			32		6,317
Pike	4,707	3,200	530	105	50	2,925	685	28		1,205	785	295	125	75	14,715
Knott	410					300									710
Letcher	200					150									350
	23,391	8,703	4,752	905	1,171	6,503	934	80	268	1,440	1,585	354	157	75	50,318

Estimated value, \$940,466

Table 5.—Present annual output of timber by counties, computed in **M** feet, board measure.

COUNTIES.	Floated Timber M Feet	Lumber M Feet	Ties M Feet	Spokes M Feet	Hauldies M Feet	Split Slaves M Feet	Sawn Slaves M Feet	Chestnut Poles M Feet	Locust Poles M Feet	Heading M Feet	Cord- wood M Feet	Total M Feet
Greenup	---	7,000	20,000	---	---	---	---	---	---	---	---	27,000
Boyd	---	4,410	4,888	840	---	---	---	---	---	---	---	10,138
Carter	---	1,960	14,052	90	---	54	---	300	480	---	328	17,264
Elliott	11,000	1,500	2,000	840	---	---	---	---	---	---	---	15,340
Lawrence	4,775	3,390	13,528	---	180	9,000	1,500	---	---	---	---	32,373
Johnson	610	6,666	11,200	---	---	---	---	108	---	---	---	18,584
Martin	16,341	3,300	4,201	---	---	---	---	346	---	---	---	24,188
Floyd	2,308	6,317	5,576	216	---	---	1,229	270	---	640	---	16,556
Pike	17,582	14,715	3,528	---	---	360	2,372	19	---	---	---	38,576
Knott	4,600	710	---	---	---	60	---	---	---	---	---	5,370
Letcher	12,500	350	---	---	---	---	---	---	---	---	---	12,850
Total	69,716	50,318	78,973	1,986	180	9,474	5,101	1,043	480	640	328	218,239

Tables 2, 3, 4, and 5 show that the annual output of forest products from this region, counted in board feet, amounts to considerably over 200,000,000 feet annually. This represents an income to the people of the region, from their timber resources, of about \$3,850,000 a year. Counting on an increase of 10 per cent of the population over the figures of the census of 1900, this gives an annual income of nearly \$22 for every man, woman, and child, in the region, or \$108 for each family. This represents probably, half the living of the entire rural population.

The average rate of growth on forests such as these is estimated at about 13 cubic feet per acre per year, while the figures show a cut of 23 cubic feet per acre; thus the cut exceeds the growth by about 77 per cent.

Since in virgin forests the growth is, in reality, offset by decay and accidents, and cutting must occur before there is actual increase in the volume of the stand, these figures are not as alarming as they would be in a country where the virgin forest has been totally removed. They are distinctly alarming, however, when the small amount of virgin forest remaining in the eleven counties is considered. The greater portion of the present cut comes from lands already culled of their choicest trees, and undoubtedly the time will soon come when the annual cut can not exceed the growth. The present cutting, then, should be done in such a manner that the greatest growth may be secured after cutting. The reserve is at present the usual result, for the young trees of the species which would make the most rapid growth are usually either cut, injured, or left under partially defective trees or trees of the poorer species where they can not develop.

The annual growth is diminishing each year because of (1) the clearing of land; (2) excessive cutting; and (3) lack of care of cut-over land. The quality of the stand is also becoming poorer each year because the most valuable species are being cut much faster than the poorer ones.

Table 6.—*Present stand and annual output in M feet board measure, by Watersheds.*

COUNTIES BY WATERSHEDS	Area.	Acres	Area forested.	Per cent forested.	Stand	M feet	Bd. feet	Average stand per acre	Lumber	Floated timber	Number of sawn ties	Sawn ties in bd. ft.	Hewn ties number	Hewn ties in bd. ft.	Other material re- duced to bd. ft.	Total output in bd. ft.
Big Sandy Watershed.																
Boyd	136,451	44,979			70,864				4,410		7,500	300	114,700	4,588	840	10,138
Lawrence	273,477	98,601			186,067				3,390	4,775	53,200	2,128	285,000	11,400	10,680	32,373
Johnson	167,424	67,706			138,205				6,666	610	224,000	8,960	56,000	2,240	108	18,584
Martin	146,777	97,861			365,987				3,300	16,341	31,500	1,260	98,500	3,940	346	24,187
Floyd	254,664	165,305	62		610,840		3,800		6,317	2,308	79,400	3,176	60,000	2,400	2,355	16,556
Pike	527,787	437,880			2,004,601				14,715	17,582	83,000	3,320	5,200	208	2,751	38,576
Knott (part)	64,838	52,930			248,789				200	1,600					60	1,860
Letcher (part)	12,748	10,387			81,846											
Total	1,584,166	975,649			3,707,199				38,998	43,216	478,600	19,144	619,400	24,776	17,140	142,274

Table 6.—Present stand and annual output in M feet board measure, by Watersheds.

COUNTIES BY WATERSHEDS	Area.	Acres	Per cent forested.	Stand	Average stand per acre	Lumber	Floated timber	Number of sawn ties	Sawn ties in bd. ft.	Hewn ties number	Hewn ties in bd. ft.	Other material re- duced to bd. ft.	Total output in bd. ft.
Big Sandy Watershed.	Acres	Acres		M feet	Bd. feet	M feet	M feet		M feet		M feet	M feet	M feet
Boyd	136,451	44,979		70,864		4,410		7,500	300	114,700	4,588	840	10,138
Lawrence	273,477	98,601		186,067		3,390	4,775	53,200	2,128	285,000	11,400	10,680	32,373
Johnson	167,424	67,706		138,205		6,666	610	224,000	8,960	56,000	2,240	108	18,584
Martin	146,777	97,861		365,987		3,300	16,341	31,500	1,260	98,500	3,940	346	24,187
Floyd	254,664	165,305	62	610,840	3,800	6,317	2,308	79,400	3,176	60,000	2,400	2,355	16,556
Pike	527,787	437,880		2,004,601		14,715	17,582	83,000	3,320	5,200	208	2,751	38,576
Knott (part)	64,838	52,930		248,789		200	1,600					60	1,860
Letcher (part)	12,748	10,387		81,846									
Total	1,584,166	975,649		3,707,199		38,998	43,216	478,600	19,144	619,400	24,776	17,140	142,274

Table 6 gives a summary of stand and output by watersheds. Average conditions can be shown only for the Big Sandy and the Little Sandy watersheds, as these are the only two that have been completely covered. From the table it is seen that the timber on the former stream should, at the present rate of cutting, last about twenty-five years. As practically all of this forest is more or less culled, the better class of timber, or what is now considered merchantable, will probably not last more than half of that time. The forests of the Little Sandy region are probably one-third immature second growth, while the remaining forest is closely cut over or heavily culled. The table shows a stand of 425,000,000 feet for the latter area, or at the present rate of cutting, only a seven years' supply. All the scattered old timber left from the previous cullings will probably be cut out within a couple of years. This will cause the closing or removal of a number of mills and wood-using industries, which require this class of material. With the consequent restricted output the smaller timber should last for some time to come. The Kentucky River and Cumberland River watersheds show a much better stand of timber than the other two districts, but as only a very small proportion of the total watersheds have as yet been covered, no conclusions can be drawn from the figures given in the tables for these two watersheds.

A forest map of these eleven counties accompanies this report. On it the counties have been divided into irregular areas, the boundaries of which in most cases correspond with the different creek watersheds, though where conditions are similar, one area may cover more than one watershed. The figures given on the map show the approximate percentage of land still in forest on the given area, while the color scheme shows the average stand per acre on the forest land of each area. These data were collected in the summer of 1907.

Forest Descriptions.

The forests are for the most part on moderate to precipitous slopes, extending from the tops of the ridges half way or entirely down to the streams. Owing probably to the steepness of the slopes and the northerly drainage, as well as other causes, the com-

COUNT

Greenup -----

Boyd -----

Carter -----

Elliott -----

Lawrence -----

Johnson -----

Martin -----

Floyd -----

Pike -----

Knott -----

Letcher -----

Total -----

position of the forest varies little with the exposure, though one or two of the subordinate species prefer one slope to another. The variation with elevation is slight and seems to depend more on moisture, especially the prevalence of fog in the valleys, than on any other factor. But the change is so gradual and the difference so slight with most species that a division into types is inadvisable and almost impossible. Only one type is recognized for the area covered by this report, that of mixed hardwoods.

This type, as the name signifies, consists of a mixture of the many different species of hardwood common to this region. An occasional mixture of pine on the ridges or upper slopes, or of hemlock along the streams, is frequent, but these trees occur only in limited quantities and make but a small proportion of the whole stand.

Table 1 shows that the most common hardwoods are yellow poplar, the oaks and hickories, chestnut, beech and maple. Probably the most constant characteristics of the forest throughout the region is the large percentage of white and chestnut oaks that appear in all situations. White oak is now the most important tree commercially in the region. Chestnut oak also extends through the region in fairly even proportion, and in nearly as large quantities as the white oak. These two trees together make up 40 per cent of the estimated stand, the percentage varying but little from this figure for each of the counties. The most noticeable variation in the distribution of these two trees occurs at elevations over 1,500 feet above sea level, where white oak gradually diminishes in quantity and chestnut oak and chestnut show a corresponding increase. Chestnut, a common tree on the higher ridges, diminishes in quantity as the elevations decrease, till it is an unimportant tree in the northern counties. Beech is pretty evenly distributed and averages about 10 per cent of the stand through the entire region. The other important timber trees vary in proportions with the general elevation of the country, the more valuable trees increasing and the less valuable diminishing as the general level of the country rises toward the south. The different trees occur singly and are of all ages and sizes, except on the cut-over lands for charcoal in the northern counties, where the forest is even-aged.

There is usually considerable underbrush composed to a great extent, however, of reproduction of the tree species. There is

very little rhododendron, or laurel, which forms such dense underbrush in some of the higher parts of the Appalachians.

Reproduction is good everywhere in the eleven counties except where fires have run over the ground. Seedlings of maple and beech are common, especially through the southern or upper region, while yellow poplar comes up well on most situations where conditions are favorable. Walnut and ash seedlings are also found commonly on the moist slopes and in the coves, the latter mostly in the upper district. Sprout reproduction is, on the whole, more abundant than that of seedlings. White, black and chestnut oaks, and hickory are the principal species all over the region, while sprouts of chestnut and linn are more abundant in the southern counties than in the northern where they are unimportant.

Forest Management.

The best scheme of management for forests of this type is one based on what foresters term the selection system. As its name indicates, the method of cutting under this system is based on the selection of individual trees throughout the stand. No tree should be cut as long as its growth and increase of value is making more for the owners than the cost of the investment. But when the growth gets so slow that it does not pay to hold it for the increase in value, it is financially mature and should be cut. The size at which trees reach maturity varies with the species, with the uses to which the timber is put, and with the condition of the markets. For convenience a diameter limit which represents as nearly as possible the size at which financial maturity is reached is usually set for each species, below which no trees should be cut. No diameter limits, however, can be given for the region, for this has to be decided by local conditions for each tract of land by itself.

The chief object in all systems of management is the same, namely, to make the forest permanently produce the largest possible revenue. To do this, the quality of the forest stand should improve instead of deteriorate, as it surely will if only the best and most valuable trees are cut, without any provision being made to restock the forest with the good species. A great deal depends on the selection of the trees for cutting. The following points

should be taken into consideration:

1. Matured trees should be marketed. These trees are not benefiting the forest and as soon as the market justifies they should be removed to give room to young vigorous trees.

2. In cutting the smaller trees, stunted specimens of all species should be taken. A thrifty tree has a large well-filled-out, vigorous crown, and even if an inferior species, it is worth more than a tree with a small, partly dead, flat, or straggling crown.

3. Vigorous, healthy young trees of all desirable species should be protected. Where these enter into competition with one another they should be favored by giving preference to different species in the following order: For the upper part of the region, yellow poplar, walnut, red oak, ash, linn, chestnut, hickory and white oak. For the lower part of the region, yellow poplar, walnut, hickory, white oak, pine, black oak, and scarlet oak.

4. All of the valuable species should not be cut at the same time; some of them should be left to scatter seed over the area that has been opened up by cutting. As much as one yellow poplar or ash seed tree that will bear abundant seed should be left on each acre, and three or four oak or chestnut trees.

5. In felling trees, care should be taken to prevent injury to the young growth, and if some destruction is unavoidable, protect the most-valuable species and the most vigorous trees.

6. All reproduction should be adequately protected from fire and from stock, especially after the cutting of the mature timber.

Under the following description of species additional recommendations as to forest management are given which are applicable to the whole forest, but especially so to the species under consideration.

Description of Species.

The general distribution of each species is given below more in detail, in order that suggestions may be made as to the special value of each species and the places they should occupy in forming the basis of future forest crops. The species are discussed in the order of their present occurrence in commercial quantities in the eleven counties.

White Oak.

With the supply of yellow poplar practically exhausted, the white oak (*Quercus alba*) becomes the most important timber tree in this region. It is found in all situations, but grows to better advantage on the moist north and west slopes and in the coves. Although the better trees have been cut in the more accessible localities, large quantities of oak are yet to be found, especially where it has been difficult to get the larger trees to market.

The average grade of white oak timber in this region is fair. Conditions vary, however. On some creeks a much larger percentage of the trees are found to be affected with borers than are found on adjoining creek watersheds. The trees on the south and east slopes are apt to be closer grained, more brash, and more defective than the trees grown in the heads of the coves or on the north and west slopes.

The white oak occurs singly mixed in with many other species or is found in groups which originally formed nearly pure stands. It is not confined to any elevation or slope, but is most abundant on the middle slopes above the general line of beech and maple, and below the general line of chestnut oak and chestnut.

The great majority of the timber trees of this species show unmistakable signs of overmaturity. On many tracts the white oaks can be picked out by their large, partly dead tops which stand out above the level of the rest of the forest. Some owners think that it will pay them best to cut their larger trees at once rather than hold their timber, thinking the raise in price can not offset the deterioration in quality. But white oak is a long-lived tree, and even after it begins to deteriorate it does so very slowly, so the question of a few years' delay in the cutting of the mature trees is not always a vital one in the management of the forest.

The rate of growth of white oak is rather slower than that of most other valuable species, but it is a tree for which there is a constant and growing demand, and one which furnishes a timber for special uses, such as staves, for which no substitute has been found. Furthermore, many hardwoods produce a greater volume and a better quality of timber in a mixed rather than a pure stand. When hickories, white oaks, black oaks, and chestnuts grow to-

gether then can stand thicker on the ground than if the trees were all hickories or all white oaks. And because they are standing closer together they will each have longer clear length and so produce more valuable wood. So the aim of the Forester is to get a mixture of species that will make the most timber of the best quality to the acre. Therefore, in all situations white oak should be encouraged as a permanent part of the forest.

In the coves and on moister slopes white oak should be allowed to grow until more valuable trees take its place. Where there is a question, however, as to the choice between white oak and other trees in the same situation, yellow poplar, walnut, red oak, linn, and chestnut should be given the preference in the northern counties. In the lower counties walnut, yellow poplar, and hickory should be favored at the expense of white oak.

Chestnut Oak.

Among the oaks, chestnut oak (*Quercus prinus*) is the next important to white oak, with which it is classed in the local market. In its distribution in the northern counties, chestnut oak is confined almost entirely to the upper parts of the ridges where it is found mixed with black oak, shortleaf pine, and pitch pine. In the upper part of the Big Sandy Valley it is often closely associated with white oak, though its usual location is on the upper slope and tops of the ridges. The trees on the south and east slopes as well as on the ridges are very brash and usually very defective. The average grade of chestnut oak is fair, but much lower than that of white oak in the same region.

The chestnut oak is well adapted to a system of forest management. Its rate of growth is more rapid than that of white oak, especially when given the advantage of favorable soil conditions. It will persist, however, in very poor localities, and for this reason makes excellent forest cover for the less fertile slopes and ridges.

After the large mature timber has been removed from the poorer localities the smaller tie timber should be allowed to remain, so that the larger openings that may be made by the removal of groups of old trees may be restocked with seedlings. It is at this

time that it is most important to keep hogs out of the woods. After a few years, when a good crop of seedlings has been secured, the remainder of the mature trees may be cut for ties or bark. Opening up the forest cover too much at one time injures the soil and often causes erosion.

In all logging operations the young growing timber as well as the small seedlings and sprouts should be protected from injury as far as possible.

Similar methods should be employed in cutting the chestnut oak found in the more favorable locations. Here the tree will respond to treatment more readily. The healthy, vigorous trees that are now just below merchantable size should be left to form the basis of future lumbering operations. With the growing scarcity of mature timber the future value of the young timber will gradually increase and doubly repay the owners for the proper care of their forests.

The income derived from the present stand of chestnut oak may be increased by holding the greater part of the more mature trees until increased transportation facilities and a better demand warrant the utilization of the bark. This product is now wasted in many logging operations. The demand for tanbark is constantly increasing and the increased revenue thus derived from the forest will more than repay the cost of caring for this industry. Tanbark is now seldom cut from the smaller trees, but the time is doubtless not far distant when it will pay to peel all chestnut oak timber that is large enough to be cut for ties or other merchantable products.

Beech.

Beech (*Fagus atropunicea*) is one of the most common trees throughout the region, and one of the least valuable ones. It usually occurs on the lower parts of the slopes and in the bottoms. In the upper end of the valley it is seldom found above the "fog line," although in a few cases stands of beech that would average 7,000 feet per acre were found just below the ridge tops on the western slope. It is closely associated with the sugar maple, especially in the upper counties. The beech here attains

a good size and compares favorably in quality with the northern grown tree. It is often more or less defective as it is very susceptible to injury, but the wood is usually highly colored and makes excellent quarter-sawn lumber. Its chief uses at present are for building material for the local market and for the construction of trams for logging the other timber. The value of beech for second-class ties is being tested by the railroads, and its use for this purpose will probably be very much extended, as practical methods of giving it preservative treatment are found.

Even though a very large proportion of the original stand of beech has been destroyed in the clearing of the land now used for agriculture, there is still a large amount of beech scattered throughout the region. Because of its slow growth and small value, the beech should not be favored under a system of forest management, but should be cut out and sold as soon as a good price can be obtained for it, so as to make room for more valuable species. Furthermore, beech usually occurs on the better soils and the proportion of it in the forest will doubtless be greatly lessened by the clearing of land suitable for agriculture. This should be encouraged since lands which will grow agricultural crops should not be left unimproved.

Beech seeds readily and will grow in a dense shade, so that where the land is not cleared, it will form a large proportion of the second forest unless other more valuable trees are favored in the same location. Its place in the forest should be given to the yellow poplar, linn, ash, and walnut, or even some of the less valuable trees such as hickory, chestnut, or white oak.

Maple.

Sugar maple (*Acer saccharum*) or "sugar tree" as it is commonly called throughout the region, is found chiefly in the coves and along the lower slopes of the southern countries, though scattered sparingly over the entire region. This tree usually forms the border line between the beech and the oaks and is thus associated with both of these species.

A large part of the original supply has been cut off in clearing the slopes for agriculture. It is still found, however, in

large quantities. At the present time maple is seldom cut for the market except in connection with other species on culled timberland that is near some local market. Its value, however, will gradually increase with the growing scarcity of other merchantable timber. It is of very slow growth, but seeds very readily, and thus forms an excellent forest cover. It should not be encouraged however, in making a part of the second forest, as situations on which sugar maple flourishes is equally suitable for the growth of other species of more rapid growth and greater value. These better species will yield a greater revenue if allowed to come in on land now occupied by the maple.

Black Oaks.

Under this heading are included three commercial species, the black oak (*Quercus velutina*) red oak (*Q. rubra*), and scarlet oak (*Q. coccinea*). Black oak is the most important of these trees because it occurs in commercial quantities throughout the region. It occurs on all situations, but is found principally on the dry slopes and ridges. In the heavily culled forests of the northern counties it often forms 25 per cent of the stand. On account of its lower commercial value black oak has not been cut to any extent till the last few years, and practically none has been floated out; now it is rapidly being sawn up by the portable mills for switch ties and car sills. It is also used for furniture and other manufacturing industries or is sawn and hewn into second-class railroad ties, which are either treated or put to temporary uses. On account of its rapid growth, its sprouting capacity and resistance to fire, and because it is cut less closely than other species, black oak forms an increasing percentage of the second growth forest, and it bids fair to be one of the most important timber trees in the future.

Red oak prefers the cooler and moister slopes. It is found only in the more southern counties and even there it forms only a small percentage of the stand. The timber is very heavy when green, so that it has not been cut for floating timber, but where portable mills are used, red oak is cut and used for the same purposes as white oak, and sells at nearly the same price. On account of its poor lasting qualities it is not accepted as first-class ties.



J. B. WALKER.

LOWELL KOUDRUSH.

Scarlet oak is found in the southern part of the district only on the driest ridges, but gradually increases in abundance as one goes north, till in Boyd and Greenup counties it forms nearly 25 per cent of the stand. It occurs in the northern counties in equal proportions with black oak and in all forms of utilization is not distinguished from it. In a managed forest it is a less desirable tree than the black oak, because of its shorter clear length. It is very resistant to fire and reproduces abundantly by sprouts. Owing to its increasing predominance in the second-growth forests of the northern counties, it is probably supposed that black oak gradually degenerates into "black jack," as the second-growth scarlet oak is often called locally, but this only means that it is better adapted to resist the adverse conditions of fire and browsing than its associates.

In the southern countries black oak is one of the least valuable species, and it should not be encouraged where a more valuable tree will grow. But in the northern countries, where many of the more valuable trees do not thrive, black oak has its place in the forest, and should be favored at the expense of the scarlet oak, its chief competitor. This latter is an aggressive species and should be thinned out as much as possible. Where firewood is needed or cord-wood is cut for nail kegs, or a pole is wanted to mend a fence or a barn, scarlet oak, beech, black gum, or some other tree that is not wanted to form a permanent part of the forest should be used.

Red oak should be classed in value with yellow poplar, ash and linn in the upper counties, and should be favored at the expense of all the other oaks. Seed and seedlings should be carefully protected from hogs and fire, so that an increasing proportion of this species may appear in the second growth. It is a rapid grower and in many industries is preferred even to white oak.

Chestnut.

Chestnut (*Castanea dentata*) occurs in scattered quantities throughout the region. In the northern counties, as in so many other parts of the Southern Appalachian region at the lower elevations, chestnut as a commercial tree seems to be dying out, though

thrifty trees are usually found on the moister slopes. This decadent condition of the chestnut is caused probably by the gradual change of soil-moisture conditions, brought on in part by the clearing up of the country. In the southern counties, however, it is often the most abundant tree on the upper waters of the streams, or even throughout some creek watersheds, especially at the higher elevations.

Chestnut crowds out the chestnut oak on the better soils and has practically the same local distribution. It prefers the more moist side of the slopes and demands a fairly porous soil. The tree matures quickly and deteriorates with equal rapidity when maturity is reached, especially in the least favorable locations. For this reason the greater proportion of the larger trees now in the forest are of very poor quality. The present local value of the tree is low, except when close to market, more because of the present supply of oak than because of the low practical value of the tree itself. The greater part of the original supply is now on the ground.

The chestnut is well adapted to a system of forest management and will reach pole size within a comparatively short time, whether grown from the sprout or from the seed.

In lumbering, chestnut should be cut if possible in the late fall, winter, or spring, for then the stumps will sprout strongly but if the trees are cut during the late summer or early fall the roots are very much weakened and the young sprouts will not be thrifty. In felling trees avoid, if possible, the breaking of branches on young chestnut. Where a limb is broken off the insects usually get in, and wormy chestnut timber is the result. When cutting down chestnut timber it is often possible to save several of the more vigorous sprouts coming up around the stump instead of trimming them all off. This should always be done, for a saving of five or ten years in the production of a chestnut pole is well worth considering. Chestnut should be favored in preference to beech, maple, and all the oaks but red oak, but should give place to this latter species and to yellow poplar, ash, walnut, and linn.

Yellow Poplar.

The tulip tree, or yellow poplar (*Liriodendron tulipifera*), is still one of the most important timber trees of this region, and until

very recently it was the most important. For very many years eastern Kentucky has been the center of the yellow poplar production of the country. The decayed remains of splash dams are found the whole length of the remotest creeks, and the rotting stumps and cull logs of large poplars show the wide extent of country through which this tree was found. Yellow poplar is now found in all parts of the region, but is practically exhausted in all of the more accessible localities. Owing to its high market value, the clear length of the trees, and its adaptability to floating it was the next tree after the walnut to be exploited. Several years ago no trees under 30 inches in diameter were considered merchantable for rafting; now anything down to 14 inches is used. Ten years ago the average log, from 20 to 90 feet long, coming down the Big Sandy River contained about 600 feet; now they barely average 370 feet. While then at least three-fourths of the floated timber was poplar, now three-fourths of it is oak and less than one-fourth is poplar. This is in spite of the fact that the latter commands a price from 30 to 50 per cent higher than that of the other species.

While the greater part of the large old timber has been removed, there is still a fair amount of small poplar timber, and a fair percentage of young trees and reproduction is found on old cuttings in various parts of the region. These old cuttings, if protected from fire, furnish ideal conditions for the regeneration of yellow poplar. Seedlings of this species require lots of light, which is let in by cutting the timber, and a mineral soil which is exposed by the logging affords ideal conditions for establishing a natural reproduction. If the seeds are there or seed trees near, and fire is kept out, a good stand of yellow poplar is practically assured. The first precaution any timberland owner should take in logging operations is to see that poplar seed trees are left to seed up the open places made by lumbering, especially in the richer coves and on the lower slopes. Trees from 12 to 18 inches in diameter make good seed trees, and such trees are usually too small to be cut with much profit. By holding them much more valuable timber may be obtained in a very few years. But even old, crooked, and unsound trees may make excellent seed trees, so when these are available they may be left instead of the merchantable timber trees. Fire must be kept from the young poplars at all costs, for they are easily killed by it, and stock injure the seedlings by biting off the tops of the

shoots. It should be kept in mind that a young yellow poplar has a value whatever its size or wherever it is growing. The seedling in the briar patch, the sapling in the fence corner, and the pole in the woods are all growing into money, and each year added to this growth means something added to the value of the land they grow on. Because trees now happen to be just below the market limit for merchantable timber, fine poles of yellow poplar are habitually cut for building purposes, mending fences, and other local use. Such poles are straight and easily worked, and are selected from this point of view. Other less valuable species should be used on the farm whenever possible. It is only necessary to call to mind the rapid increase in poplar stumpage and the present comparatively small size to which the trees are cut for lumber, to be assured of the profit to be derived from a careful management of the younger trees.

Hickory.

The merchantable hickory of this region includes two species: mockernut (*Hicoria alba*), and shagbark (*H. ovata*). Two other species: pignut, (*H. globra*), and bitternut (*H. minima*), are also found in small quantities. Hickory occurs on all situations throughout the region, in scattered trees only. The quality of the timber varies with the character of the soil and its general location. Trees growing on a clayey soil are usually considered more desirable than trees growing on a more sandy soil. As far as the exploitation has been carried on at the present time, the trees found in the region decrease in quality from the lower to the upper part of the valley.

Green hickory logs will not float and dry hickory is not wanted, as it is subject to attack by insects, so that practically all of this timber away from the railroads is still standing. Many portable mills will not saw hickory because of the low percentage of lumber suitable for rims and wagon stock, that can be obtained by sawing it. There is only a small local demand for the poorer grades. But in the northern counties the handle and spoke industries have used up the greater part of the available hickory.

The species coming up in larger proportion on old fields is the shagbark, but in utilization this species is considered rather inferior to the mockernut, especially for handle wood, for which use its

alleged greater liability to knots, bird pecks, etc., render it less desirable.

When the present supply of old forest-grown timber has been cut out, hickory users will have to depend on the second growth. It seems fairly certain that the demand for this timber will increase rather than diminish, and as this region seems well adapted to its production it should be favored in most situations in preference to the oaks and other less valuable species.

It is poor economy to cut down a hickory pole 6 or 8 inches in diameter to trim out at a cost of 50 cents in labor one ax handle that can be bought at the nearest store for 15 cents, especially in view of the fact that this same tree may be worth \$1 in a very few years' time. A realization of the value of young trees is one of the first steps in the improvement of the management of our forests.

Basswood.

Two species of basswood grow commonly throughout the region, *Tilia americana* the basswood, and *T. heterophylla* the linn. They are both known as linn throughout the Southern Appalachians and are not distinguished here.

This tree prefers the cooler moister slopes of the upper counties, but is there found on all slopes. In the lower counties it is rather scarce and is only found near streams and on north slopes. The tree is cut largely for floating timber and is classed with poplar and cucumber, which together are known as the soft woods. Linn sprouts strongly from the stump, and if cattle can be kept from it, will reproduce itself very satisfactorily in that way. Sprouts around the base of an older tree often attain a large size; where the crowns of these sprouts have not been stunted by the old tree, they should be protected as much as possible in lumbering operation. Because of its rapid growth and because its market value closely follows that of yellow poplar, all the young, vigorous trees in the forest should be allowed to mature. Each tree that is protected and encouraged aids to the future value of the forest as a whole.

White Ash.

White ash (*Fraxinus americana*) is found throughout the region; and is the only ash of commercial importance occurring in it. It grows chiefly, however, on the moister slopes of the more southerly counties, associated with yellow poplar, linn, and cucumber, with which species it is usually cut and rafted. Because it is easily floated and has usually brought good prices there is now a comparatively small amount of it left in the Big Sandy watershed, and practically none in the Little Sandy.

Ash reproduces itself well from seed or by sprouts, and there should be little trouble in increasing the proportion of this valuable species in the forests of the upper counties. This can be accomplished by protecting the young seedlings and small poles that may be found, or by leaving trees that are just under merchantable timber size for the purpose of producing seed. Within a very few years fresh stands of seedlings will be found near the seed trees. This will entail no extra expense, but only careful foresight on the part of individual owners.

Cucumber.

The cucumber tree (*Magnolia acuminata*) grows in practically all this region, but is found nowhere in large quantities. It is usually found in the coves in admixture with yellow poplar and beech. Commercially the cucumber tree has practically the same value as yellow poplar, with which it is sold after being converted into lumber. In eastern Kentucky there is comparatively little cucumber, as it has been cut and sold with the yellow poplar. Whatever young trees are found should be protected, as recommended for yellow poplar, and the species should be allowed to form as much of the second forest as it is capable of doing in competition with other species.

Black Locust.

Black locust (*Robinia pseudacacia*) is found scattered through-

out the region. Some areas at the head of the Big Sandy Valley, especially in limestone and sandstone formations, contain as much as 300 feet of black locust timber per acre. But this is exceptional, for not much locust is found through the region as a whole. In the lower counties locust has almost entirely disappeared from the forest, but in many places it is coming in on old fields. It is in such situations that its chief future use to the region will be found.

Locust needs plenty of light and will not come up and flourish in the dense forest. If an opening is made that is large enough for the locust to get an even start with the competing species surrounding it, it will do well. But this can not ordinarily be done in a managed forest, and where it is done, there is often more valuable trees than locust to come in. But when old fields are abandoned, and locust comes up among the sassafras and sumach, it is usually by far the most valuable tree present, with the possible exception of an occasional yellow poplar. In these places locust should be encouraged as much as possible. By cutting posts or stakes in the winter or spring, sprouts are started from the roots and a second growth of locust can be obtained. A good locust grove on old fields should be more profitable than a scanty crop of corn, and a cheaper one to raise.

Pine.

Three species of pine are found commonly distributed throughout the region, shortleaf (*pinus echinata*), pitch pine, (*P. rigida*), and scrub pine (*P. virginiana*), and all are cut for lumber. Scrub pine, which grows in considerable quantities and sometimes in almost pure stands on some of the dry hillsides in the lower counties, is cut for lumber only locally, as it rarely attains a diameter of over 12 inches.

Shortleaf and pitch pine grow together on the ridges and the drier slopes throughout the region, mixed with the various oaks, hickories, and other trees that are found on such situations. The shortleaf, often locally called "yellow pine," is a better timber tree than the pitch or "black" pine, when found on the same situation, owing to its greater clear length and smoother bole. On higher elevations, however, the "black" pine becomes an excellent

timber tree. The great majority of pine marketed is shortleaf, but there is no distinction made in price and usually not even in name.

Pine in the Big Sandy Valley is small, of comparatively poor quality, and rather inaccessible. For these reasons it has not been cut much up to a few years ago, but it is now nearly exhausted in the lower counties. Practically all pine is cut into dimension and bill stuff for the local building trade. For this purpose it brings one or two dollars a thousand more than the common hardwoods.

All three of the pines reproduce themselves readily from seed, and where seed trees are present in sufficient numbers sometimes dense pure stands of reproduction and second growth are found.

Shortleaf, though of rather slow growth, seems admirably adapted to reforesting old fields and eroded slopes, and should be one of the first trees tried in experimental planting. It is also a valuable tree on the ridges, as the lack of moisture that hinders the best growth of the hardwoods has much less effect on the growth of the pine. For this reason the comparative value of the pine grown on the ridges is greater than that of chestnut oak and black oak, and should be encouraged. Where it is possible, trees should be left to scatter seed along the drier ridges, and the young growth should be carefully protected. Fire often seems to do no direct damage to the old, thick-barked trees, but it destroys all seedlings. There will probably be no need to favor shortleaf pine where it is mixed with the hardwoods, for it can generally take care of itself, but where the scrub pine and shortleaf grow together, the former should be cut out to favor the shortleaf, when opportunity offers, and in saving seed trees this pine should be preferred to the scrub or the pitch pine.

Hemlock.

The commercial range of hemlock (*Tsuga canadensis*) in this region is confined entirely to the moist cool gulches and slopes, and the banks of streams "below the fog line." Until recently its value was so small that it did not pay to exploit it except in very accessible places. Often it was peeled for the tanbark alone, and the timber left in the woods. But now, with the supply of more valuable species rapidly becoming exhausted, the hemlock is being taken

out. The principal part of merchantable hemlock is found in the southern-most counties.

Because of a large matted system of surface roots the hemlock is a valuable tree for the prevention of erosion along streams and banks. Where there is danger from erosion, the hemlock should be encouraged. For this reason this tree is especially desirable in a protection forest, such as the State should own and control, for the regulation of the streamflow. But in a private forest, managed solely for the production of timber, hemlock is not a desirable tree. Many of the more valuable species, as yellow poplar, linn, ash, red oak, chestnut, and white oak flourish on the moist situations that hemlock prefers, and these should be encouraged at the expense of this tree.

Walnut.

Walnut (*Juglans nigra*) was practically the first tree to be cut in any quantity in this region, and was taken out together with the first logging of the large yellow poplar. Very few boundaries now contain walnut of any considerable size, but small trees occur in all the more moist situations, in the coves and on the lower slopes.

Large numbers of young walnut trees are now found on practically all the creeks and are cut for ties and small timber as rapidly as they grow to merchantable size. The practice of cutting small trees into ties is wasteful and unprofitable. Stumpage for tie timber is worth on an average 10 cents a tie, which amounts to \$2.50 per M feet board measure. No farmer would sell the walnut off his place to a saw mill man for such a price as this. Yet he cuts it into ties, not realizing that the small trees will in a comparatively short time grow into valuable timber. With the best grades of walnut timber listed at \$107 per M at Ohio river points, and probably going higher, it should certainly pay any land owner well to give every walnut sapling or seedling a chance to grow to saw-log size.

Black Gum.

Black gum (*Nyssa sylvatica*) in eastern Kentucky is of small importance. It is found nowhere in a pure stand, but is scattered singly among the other hardwood species. It occurs in all situations but perhaps is more common on the drier slopes.

Five years ago black gum had no market value. At the present time it is marketed together with the black oak, beech, and maple for local use, and sells at about the same price. The black gum, however, should in no way be encouraged in caring for a second-growth forest, as nearly all the commercial species are of more value and should be favored at the expense of this tree.

Black Cherry.

Black cherry (*Prunus serotina*) is no longer of commercial importance on the Big Sandy, though small trees and reproduction are scattered all over the region. On account of their value, practically all trees of merchantable size have been taken. The only cherry timber now left is on the head waters of the Kentucky River in Letcher County, where there are still some large boundaries of virgin timber containing scattered trees of this valuable species. After this is cut the tree will be of little commercial importance in these forests. But wherever small trees and young growth of black cherry are found in moist cool situations it should be protected and encouraged along with the other more valuable species. Cherry, like locust, is apt to grow straggly when grown in the open, so that it should be allowed to grow up closely surrounded by other trees in order to obtain a good clear length and a straight stem.

CONDITIONS BY COUNTIES.

A local description of each of the eleven counties is given in order that the conditions of the forest land in each county may be more clearly understood, and to show the immediate need for the adoption of some definite method of caring for the forest land.

In the northern counties the condition just now in regard to the timber resources of the region appears to be rather discouraging. This is just a transition period. Utilization of the old timber has been very close the last few years, and the output large, till there is now comparatively little left, while the younger thrifty growth has not had time to reach merchantable size. There is no reason why these forests should not become as productive as any in the region. Just now is the critical period of their life. The forests have as a rule been very much overcut, and what old trees are left are nearly all of inferior species. These old trees should be cut as occasion offers, for they are in the way of the growing young trees. Where seed trees are needed and cull trees of the more valuable species, such as poplar, ash, chestnut, etc., are present, these can be left till the ground is well seeded, when they should be removed. But strong, thrifty young trees are preferable for seed trees, for they not only produce better seed in greater quantities, but they themselves are becoming more valuable each year and thus add to the revenue of the forest. During the rejuvenation of the forest, stock should be kept out of the woods, and protection from fire is essential.

The lower counties have a very fair system of county roads which assists very much in making a market for all classes of forest products. This should not be taken advantage of for the sale of everything for which there is a market, but it should assist in the disposal of the undesirable species which will benefit the forest by their removal. Trees which it is fairly certain will increase in value, and which will constantly add to the value of the forest property, should, whenever possible, be reserved as an investment.

Forest conditions in the southern counties are not yet as serious as lower down the Rio Sandy River but they are rapidly ap-

proaching the same condition. Unless some decisive steps are taken to conserve the present supply of timber and provide for the care and protection of the more valuable, thrifty young trees, the same conditions found in the more northern counties will soon prevail. For this reason the adoption of practical methods of forest management is earnestly recommended for they are just as important in these as in the more northern counties. The old mature trees will soon have to be removed, and by doing this carefully, so as to protect the young growth from injury, satisfactory results can be obtained in a shorter time than as a general rule will be possible in the poorer, more culled over forests.

Greenup County.

Greenup is the most northern county covered by this study. It contains approximately 190,000 acres of land, nearly 60 per cent of which is still in forest. It is drained by the Ohio River, which forms its northern border, and by the lower waters of Little Sandy River and Tygart Creek, with their tributaries. The hills are rounded and rarely rise to more than 300 feet above the level of the streams.

The rocks are the usual shales and sandstones. Very little coal is found in the county, but a very good quality of fire clay is mined in various parts of it. With the exception of the strips of bottom-land along the streams, the soil is poor. Corn for home consumption and sorghum molasses are the chief crops, while in the southwestern part of the county tobacco is grown for the market.

The Eastern Kentucky and the C. & O. Railroads run through the county, and together with the Ohio River, furnish very good transportation facilities.

With the exception of two or three small tracts, there is no old timber in Greenup County. Up to 20 or 30 years ago, blast furnaces were running in various parts of the county, smelting the iron ores which were found on and near the surface. Probably half the forest area of Greenup has been cut clear, some of it two or three times, to make charcoal for these furnaces. All of this "coaled over" land which has grown up again into merchantable forest has been cut over recently by portable sawmills and what is too

small to justify a sawmill operation has mostly been culled for first and second-class ties. There are now about 35 small sawmills in the county, many of which are nothing more, however, than local custom mills, grinding corn and sawing the logs brought in from nearby farms. The large timber can not last more than two or three years, and at the present rate of cutting six years would see the present stand of merchantable timber exhausted. But timber is being used to a smaller diameter each year, and with the gradual reduction of output, the growth of the young stands and the increased use of second-class material, there will probably be a large, though rapidly diminishing amount of ties taken from the county for several years to come.

The chief objects to be worked for in the management of the even-aged oak forests of sprout origin, such as are found in Greenup and the northern parts of Carter and Boyd Counties, are (1) the production of large sized timber of the most valuable species; (2) the production of ties from the inferior species; and (3) the gradual conversion of the sprout forest into one of seedling growth. In all suitable situations thrifty trees of poplar, walnut, and white oak should be allowed to grow to 16 inches or over, that is, into sizes suitable for the production of valuable lumber, or in the case of the latter species, of staves. Only young, vigorous specimens with large, healthy crowns should be selected for this purpose. They should be favored by the gradual removal of the inferior species from around them. The black oaks, beech, etc., should be cut for ties and other small salable material. The openings made by these cuttings will be seeded up from the better species, which have been left for the future production of lumber or for seed trees. Under this system the trees left on the ground should soon have their tops well above the general level of the remaining part of the forest cover, and so produce more seed and scatter it better than smaller trees whose tops are on a level with the rest of the forest. Sprout growth starts sooner and at first grows faster than that from seedlings, but the great advantage of the latter is that it is longer lived and as a rule, is sounder and better than that grown from sprouts. Forests of this kind should be carefully protected from fire and stock, especially during and succeeding the process of reseedling.

Carter County.

Carter County has an approximate area of 252,000 acres. This county is drained by the Little Sandy River and Tygart Creek. The valleys between the ridges are often very wide, making excellent farms, while the banks along some of the larger creeks are high and precipitous.

The principal industries are agriculture, lumbering, and the mining of coal and fire clay. Lumbering is now carried on chiefly by the portable sawmills.

Two railroads now cross the county and an additional spur enters the northwest part, bringing the greater portion of Carter County within a fair hauling distance of the railroads. Wagon roads are in fair condition, and have materially facilitated the lumbering of all forest products.

There are now only two or three small boundaries of good timber left in the county and these are now being rapidly cut over so that the amount of first-class timber is very limited and the greater part of the present output consists of ties and lumber that is used locally. A comparison of the present stand of oak with the rates of yearly output shows that within four years the production of ties will be materially lessened unless black oak is used more than at the present time. According to the mill men, timber is everywhere scarce and hard to obtain.

The greater proportion of the forests in Carter County are heavily culled. The better species have been taken out in a number of successive cuttings which have covered the same areas. For the most part the trees of merchantable size now on the ground are of the very poor grade and are mixed with younger trees of all species. The management of this culled forest would include the careful selection of the poorer species for local markets for ties and lumber, leaving on the ground the larger of the more valuable species, such as white and chestnut oak, red oak, poplar, linn, ash, etc., to serve as seed trees. With thorough protection of the forest these seed trees will be able to furnish a fresh crop of seedlings within a few years, and thus insure the predominance of those species which will eventually form the future forest crops. Young vigorous trees of the species mentioned which are now below 12

inches in diameter should in no case be cut for ties and lumber but should be left in order to form the basis of the next forest crop of mature trees. This method of handling the present forests will tend to decrease the amount of timber that would otherwise be cut at the present time for all the forest industries. On the other hand it is practically the only means of utilizing the present forest and at the same time secure a future forest crop of the better species.

Conditions in the even-aged forests on the coaled-over lands in the northern part of the county correspond closely to those of Greenup and Boyd. Suggestions given under the heading of the former county will apply equally well to similar forests in Carter County.

Elliott County.

Elliott County is situated on the headwaters of the Little Sandy River and contains approximately 145,000 acres, with the exception of a small area of the southwest corner, the entire county is drained by the Little Sandy and its tributaries. The topography is very broken. In many cases the streams have cut their way through strata of rock to a depth of 200 feet. The average slope of the hills is about 15 per cent.

The main industry in the county is agriculture. Aside from farming there is lumbering and milling of different sorts.

Elliott County is tapped by no railroad, the nearest shipping point by rail being Leon, on the Chesapeake and Ohio, in Carter County. The wagon roads are few in number, and in poor condition, which makes hauling very expensive and makes impracticable the marketing of much material which can be sold where transportation facilities are better. There is rumor of a railroad being built through the southern part of the county, which, if built, will undoubtedly add a great deal to the future development of Elliott County.

The streams draining the county to the north are admirably adapted to driving. This accounts for the large percentage of cleared land, the timber having been logged and floated out in years past.

The present forest covers about 40 per cent of the area of the county and is found mostly in patches of from ten to several hundred acres in extent, with larger areas of cleared land between. Unlike many other counties the forests are usually found along the ridges and lower slopes. The forests have been culled over, leaving about two thousand feet to the acre, or an estimated stand of 110 million feet for the county. Of this amount the oaks constitute about two-thirds, while the balance consists largely of beech, chestnut, pine, and hickory. Along the rough streams and gorges a large percentage of hemlock is found. The headwaters of the streams are naturally more heavily wooded than the lower parts of the streams owing to the increased distance from the railroad or points of manufacture.

There are few manufacturing establishments in Elliott County; most of the timber being floated out. The largest woodworking establishment in the county is a spoke mill on Newcomb Creek. Unlike the other neighboring counties, Elliott County produces few ties. The total annual cut of Elliott County would approximate 15,000,000 feet. Since stumpage is worth about \$3 per thousand feet board measure, the annual revenue which Elliott County derives from its raw timber is about \$50,000. It is estimated that the present supply of merchantable timber will be exhausted in about seven years.

From these facts it will be seen that Elliott County has practically exhausted its timber supply, and owing to the increased difficulty and cost of securing merchantable timber, a decrease in output is to be expected from the present time on. With the advent of a railroad through the county a temporary increase in output would be noticed, but the time when all the merchantable timber is exhausted would come much sooner.

Aside from the large areas of culled forests in Elliott County, which should be managed on the same basis as the forests of Carter County, there are extensive areas of old fields on the tops of ridges and along the upper slopes that are rapidly being seeded by black locust. These old fields of locust should be cared for, as they will yield a good revenue in a very few years from a crop of posts. Many of these stands now contain trees up to 5 inches in diameter and 30 feet in height. In addition to the necessary protection in their earlier stages of development, these stands should

be carefully thinned in order to give the more vigorous trees in the stand sufficient space for their most rapid development. The badly crowded trees, which are also those of smaller diameters, should be cut out from time to time as the better trees develop, leaving the better trees from 10 to 12 feet apart each way as soon as they attain an average diameter of 5 inches. No exact rules for thinning, however, can be closely followed, as the space given to each tree will depend on its own development as well as the development of the surrounding trees. The extent of the thinning should be conservative and follow the natural lines of the development of the whole stand.

Black locust, if cut while the leaves are off the trees, sprouts vigorously from the stump and roots, and with proper care the stand should become more dense after the first crop of posts is cut off. It is practically certain that a better revenue could be derived from these young stands of locust under a system of management for posts than could be realized if the same land was cleared for pasture or crops, and with much less cost of labor to the owner.

Boyd County.

Boyd County is in the lower end of the Big Sandy valley and is mostly drained by streams flowing into the Big Sandy and Little Sandy rivers. Its area is approximately 137,000 acres. As a rule the hills are comparatively low, and the valleys wider than in any other county in this watershed.

Agriculture is the principal industry. Coal and fire clay are mined to some extent in the western part of the county. The lumber industry is being rapidly confined to the smaller portable mills.

Transportation facilities are good. Two railroads cross the county, and a third railroad is within hauling distance of its western border. The county roads are excellent and are kept in good condition.

Aside from a number of small scattered areas of good timber there is only one large area of good timber in the county; this will be completely cut over the coming year, so in the future only

a small percentage of the better grades of lumber can be obtained from this county. As a result of continued lumbering for a number of years, white oak is now only a secondary species in the formation of the forest cover, while black and red oak predominates.

Catlettsburg, at the mouth of the Big Sandy River, and Ashland, five miles further down the Ohio, both in Boyd County, are the chief markets for the floated timber which is cut and rafted from all the southern counties, and several large band mills are situated at these towns. In the tabulated statement their output has not been credited to this county, but to the counties where the timber was cut.

Lawrence County.

Lawrence County has an area of about 275,000 acres of which only about 36 per cent is now in forest. With the exception of a narrow strip along the northern boundary the entire county is drained by the Big Sandy River and its tributary, Blaine Creek. In elevation the county varies between 550 feet above sea level at the Big Sandy and 1,000 feet on the highest ridges. The topography is broken and the roads keep near the streams in most cases.

The main industries in the county are farming, lumbering and milling of different sorts.

Lawrence County is well supplied with means of transportation. Along the eastern border are the Big Sandy River and Chesapeake and Ohio Railroad while the Eastern Kentucky Railroad enters the northwest corner; running through the middle of the county from west to east is Blaine Creek, containing floating water for 30 or 40 miles of its length. In most places the roads are in fair shape.

The timber has been mostly taken out of Lawrence County. That which remains occurs in patches from a few acres to several hundred acres in extent. These patches have been culled over, only the poorer white and black oak, pine, hemlock, beech, and chestnut, remaining. It is estimated that about 200,000,000 feet of timber is still standing in the county. At the present rate of consumption this supply would last about six years; the better grades of timber, however, will be exhausted in a shorter time.

Over two-thirds of the present output is in the form of ties, handles, and the lower grades of lumber.

Johnson County.

Johnson County is situated directly south of Lawrence and is adjacent to it. It is drained by the waters of the Big Sandy River, mainly by Paint and Blaine Creeks. Its approximate area is 170,000 acres. The topography is broken as in the surrounding counties, and the mean elevation is practically the same.

For transportation the county depends upon both the river and the railroad which divide the county north and south. The main streams are all drivable, but in most places the roads are in poor shape.

There are a few good stands of timber in the county, but for the most part it has been heavily culled. It is estimated that 160 million feet of timber still remains, consisting largely of the poorer qualities of oak, chestnut, hickory, beech, etc.

At present the tie industry holds first place among the forest industries, Johnson County producing about 300,000 ties, equivalent to 12 million board feet. The total output in feet board measure approximate 14 million, while about 80 cars of tanbark were shipped the past year; some of this, however, was hauled in from adjoining counties. At the present rate of consumption it is estimated that Johnson County's timber supply will last but eight years, but with the growing scarcity of merchantable timber the rate of consumption will decrease gradually until the annual cut of timber is equal to the annual increase by growth.

The two counties of Lawrence and Johnson appear to be in a more discouraging condition just now in regard to their timber resources than any other part of the region. The old growth forest has nearly disappeared and the second growth has not had time to take its place. Immediate precautions are demanded so that the succeeding crop of trees may be healthy and vigorous and of the best species. Neglect now will mean a serious diminution in the future revenue from the forests. With care and simple management there is no reason why these forests should not become as productive as any in the Big Sandy region.

Martin County.

Martin County lies between the Levisa Fork and the Tug Fork of the Big Sandy River, and north of Pike County. Its area is approximately 150,000 acres. The topography is broken, the drainage being entirely to the east into the Tug Fork, Wolfe and Rockcastle being the two main creeks.

For transportation, Martin County depends upon the Tug and Levisa forks of the Big Sandy River and the Norfolk and Western Railroad which runs along the West Virginia bank of the Tug Fork. All of the streams are drivable, and most of them are used for that purpose. The roads are generally in very poor condition.

The timber supply in this country is greater than in any of the counties below on the Big Sandy River. Some very good tracts are located on the heads of the streams on the south side of the county. These tracts run as high as 8,000 to the acre, consisting largely of poplar, oak, chestnut, beech, etc. Much of the county, however, has been heavily culled, only the customary tie timber and low grade material remaining. Very little timber is sawn in the county, most of it being floated. It is estimated that there are 380,000,000 feet of timber in the county, consisting of oak, poplar, chestnut, hickory, pine, etc. It is estimated that at the present rate of consumption, the timber will last about twelve years. At the present time the county has very poor railroad facilities, but railroads are already projected, the completion of which will cause a heavy drain on the present timber supply.

The future supply of timber in Martin County depends on the conservative handling of its present supply. The mature trees in the nearly virgin forests should be marketed and thus give place to a second crop of merchantable timber. These mature trees should be taken out of the forest with as little damage as possible to whatever desirable young trees are found in the present stands, following the suggestions given below in regard to conservative lumbering. Occasional trees of yellow poplar, ash, oaks, and linn should be left for seed trees on the areas that will practically be cut clean by removing all the mature trees in the stand. Opportunities for preserving the better trees that are just below merchantable size are excellent, and if followed, a second crop of mer-

chantable timber will be available within comparatively few years.

The management of the culled forests should follow the recommendations already given for that type of timberland, and thus always aim to keep the timber-producing capacity of the forests as high as possible.

Floyd County.

Floyd County joins a part of Pike County on the north and is entirely within the western side of the Big Sandy watershed. It has an approximate area of 255,000 acres. It is drained by creeks which empty into Levisa Fork. The soil and topography are practically identical with those of the surrounding counties except that the hills are not as high. The ridges are on an average about 600 feet above the beds of the streams.

Agriculture and all forms of lumbering are the principal industries. Except in one case, the coal mines are undeveloped; the citizens, however, obtain their winter fuel from small coal openings which are scattered throughout the county. Oil is now being pumped from a large number of wells in the western side of the county. Gas has also been found.

The C. & O. Railroad runs through the eastern side of the county, so that the greater part of the timber is within a fair hauling distance of some shipping point. The roads would be good in some sections if they were not badly broken up by constant hauling.

The present stand of timber is being cut off very rapidly. The lower part of the county is heavily cut over for the better grades of timber, while the upper part of the county contains many thousand acres of timberland from which only the best poplar has been removed.

On the whole, at least one-half of the original supply of oak has been removed and the present supply of this most valuable timber can not last more than a few years, except the occasional boundaries that are held for advanced prices or are held by different companies as a source of future supply for their particular benefit. The poorer grades of oak which may be sawn into ties are more abundant, and should last some years after the better grades have been exhausted.

These conditions, however, may be materially changed by adopting and enforcing more conservative methods of logging and by adequate protection of the young forests. In this manner the present producing capacity of the forests as a whole will be materially increased.

Market conditions are fair and the demand for tie material and the poorer grades of lumber will gradually increase, thus affording excellent opportunities for the marketing of the grade of material which it is advisable for the owners to cut out of their forests, according to the scheme of forest management that has been previously outlined. All the promising young timber of the better species should be left to reach maturity and thus aid in providing a partial supply for future demands. It is safe to say that the history of the rise of the market value of yellow poplar of all sizes within the past ten years will be repeated to a greater or less extent with the other more valuable species. With this in mind the owners will be more thoroughly convinced of the advisability of introducing more conservative methods of exploitation at the present time.

Pike County.

Pike County, at the upper end of the Big Sandy watershed, contains an area of approximately 528,000 acres. The whole county is mountainous, with its highest elevation of 3,000 feet along the southern border. Numerous creeks which cut the surface up into a series of ridges and narrow valleys flow into both Tug Fork and Levisa Fork of the Big Sandy River. As a rule the hillsides are quite steep, often having a slope of 25 to 40 per cent, or even more. The county is thickly settled, and it is usually found necessary to cultivate the lower part of even the steepest slopes.

Farming, lumbering, and mining are the principal industries. Coal is now being mined for the market in only a few localities, but promises to become the most important industry in the county within a very few years. Coal is used by the citizens in small quantities, each farmer usually mining his own supply of winter fuel.

The N. & W. Railroad follows the eastern boundary of the county on the West Virginia side of Tug River, while the C. & O. Railroad follows Levisa and Russel Forks to the southern part of

the county and up Marrowbone Creek to Hellier. Over one-half of the county is thus within moderate hauling distance from the railroad. Roads throughout the county are very poor, or none at all.

The present supply of poplar is very low; small boundaries containing virgin poplar are found only in a very few localities. The other softwoods—ash, cucumber, and linn—are even less abundant. White and chestnut oak of all grades form the largest part of the valuable timber. Hickory, chestnut, beech, black oak, and maple, which make up the greater proportion of the remaining part of the forest, are cut at present only in very limited quantities, so that most of these timber trees are still on the ground, there being at present a very limited market for them in the county. Small poplars and other hardwoods are often found in abundance, and if properly protected they will provide a fair market supply in the future and will always be in demand.

The present rate of consumption of the more valuable oaks is very high in comparison with the supply. The amount of oak timber that will be cut and placed on the open market is rapidly decreasing, and it is now the policy of a large number of industries demanding a steady oak supply to purchase large tracts of standing oak and allow the trees to remain on the ground until needed for their own use. The present rate of consumption may be seen in the tables accompanying this report.

The solution of the problem of a future timber supply may be more easily worked out in Pike County than in the majority of the lower counties. Only comparatively small areas have been cut over for the third time. This means that very little timber other than the mature trees has been removed. In many cases the owners already realize what the future value of their young timber will be, especially when these forests contain a large amount of young poplar or walnut. The same outlook applies in the case of the young white oak, chestnut oak, ash, linn, and cucumber, and the same care should be taken of all the valuable young forest growth.

A large part of the young timber in this county will be used in the future mining industries of the county, and unless care is taken in the cutting of the present supply of timber, the amount needed in coal mining will completely utilize all of the young tim-

ber in certain sections of the county. Careful utilization and protection of the present supply will alone aid in meeting this future demand.

Knott County.

Knott County has an approximate area of 223,000 acres. About one-third of the county is drained by the waters of the Big Sandy, while the western two-thirds of the county is drained by creeks flowing west into the Kentucky River. The divide between the two watersheds is comparatively low, and slopes gently to the west, but quite abruptly to the east. The general topography is the same as in the other mountain counties, except that the slopes along the lower courses of the creeks in the northwestern part of the county are very steep and often abrupt.

Agriculture is the principal industry, while lumbering is not carried on to any extent only in the eastern part of the county. There are very few sawmills in the county, the greater part of the timber, staves, and ties being floated out. There are no railroads, and the wagon roads are only in fair condition.

The greater part of the large poplar has been removed. There is still left, however, a good amount of poplar of the smaller diameters as well as some ash, cucumber, and linn. Only a small percentage of the original stand of white and chestnut oak found in the county has been marketed up to the present time. The rate of timber consumption is comparatively slow, but no doubt will increase decidedly within the next few years.

Knott County has excellent opportunities for the future conservative management of its timber resources, as only a small proportion of the mature oaks and other hardwoods has been removed.

State forest reserves could be established in different localities, at the head of both the Big Sandy and Kentucky River watersheds. These reserves would be managed as practical examples for the remaining part of the county and thus be of great benefit to the individual owners of forest land.

Letcher County.

Letcher County contains a very small area of the Big Sandy watershed, over 79 per cent of the area being in the Kentucky River watershed, and about 15 per cent of the area being in the Cumberland River watershed. The total area of the county is approximately 227,000 acres. The topography is that of narrow valleys and ridges that have an average height above the beds of the streams of about 700 feet; the southern corner of the county, however, is crossed by Pine Mountain, which has an elevation of 2,000 feet above the beds of the creeks, while Black Mountain forms a part of the southern border of the county. Clay forms the principal soil, except that of Pine Mountain, which is principally of a sandstone formation.

Agriculture and lumbering are the principal industries. Some of the creek valleys contain large areas of very fertile land. Coal mining has not yet been developed, but promises to become one of the prominent future industries. Individual coal openings, however, furnish the fuel supply for the citizens.

Transportation facilities are exceedingly poor. No railroad enters the county, and with the exception of the southeast corner of the county, none of the county's timber is within hauling distance from any railroad. The creeks and rivers are large enough to allow floating of the soft-woods, and a small percentage of the oak timber. How soon the county will have the benefit of railroad transportation is a matter of speculation. Wagon roads are in fair condition in the greater part of the county.

Letcher County still retains a large percentage of its supply of poplar and other softwoods, and only a very small percentage of the oak timber has been cut. The remaining species which make up the total stand of timber are on the ground, except what is used each year in local consumption.

From these facts it is evident that lumbering in Letcher County has not yet reached its height, and will not do so for a number of years. A large part of the present supply of standing timber, however, is now owned by different companies or by private individuals as a source of investment. It is safe to say that only 50 per cent

of the present supply of standing white and chestnut oak is now owned by the local citizens.

This county affords some excellent areas for the establishment of forest reserves, to be under the control of either the State or the Government. The management of these reserves would serve as definite examples of conservative management for the benefit of the citizens and timber owners of these regions.

For a number of years lumbering operations will be confined to the marketing of the softwoods and the more mature white and chestnut oak. Single trees throughout the forest will be cut, leaving the trees of smaller diameters on the ground. These will in turn be cut only as better market conditions are offered. Under this system of cutting, special care can be given the younger trees, and as little damage as possible done to the future timber crop. The future market for these younger trees is certain, so that the additional value of the young forests that are managed conservatively and protected is practically assured.

TIMBER INDUSTRIES.

Lumbering.

Aside from agriculture the production of lumber is the most important industry in eastern Kentucky. It began with the floating out of the larger walnut, yellow poplar, and oak. Lumber prices gradually advanced and the available supply of the larger trees cut for floating began to decrease. Greater transportation facilities were then offered by the building of railroads, so that at the present time more lumber is manufactured each year close to the source of supply than is floated down the streams to the larger mills on the Ohio river.

Yellow poplar and white and chestnut oak, have always formed the larger and most valuable part of the timber output, while ash, cucumber, and basswood are cut in considerable though diminishing quantities. All these species have a recognized standing in the lumber trade, and are in strong and steady demand. Walnut is eagerly sought for, but there is very little of sawlog size in the eleven counties. Hickory, chestnut, beech, maple, black oak, and other species are cut only in very limited quantities for the market, though the supply of these species is often excellent. In the lower part of the Big Sandy Valley, where the supply of timber is scarce, all kinds of lumber are cut for the Market. This closer cutting will also gradually take place throughout the whole valley as the present supply of timber decreases.

Stumpage values are fairly uniform. They vary, however, with the distance of the supply from the nearest railroad or stream, and with the grade of the timber purchased. A poor grade of oak timber close to the railroad often sells for as much as the best grades of oak that are located beyond a fair hauling distance from the railroad. Prices for yellow poplar and other softwoods are very uniform, as they are easily floated or splashed out of the small creeks and do not depend on the proximity of the railroad for their market value. In many localities trees other than white and chestnut oak, poplar, etc., are now considered of very little value, and no thought is given to their certain future as marketable timber.

of the present supply of standing white and chestnut oak is now owned by the local citizens.

This county affords some excellent areas for the establishment of forest reserves, to be under the control of either the State or the Government. The management of these reserves would serve as definite examples of conservative management for the benefit of the citizens and timber owners of these regions.

For a number of years lumbering operations will be confined to the marketing of the softwoods and the more mature white and chestnut oak. Single trees throughout the forest will be cut, leaving the trees of smaller diameters on the ground. These will in turn be cut only as better market conditions are offered. Under this system of cutting, special care can be given the younger trees, and as little damage as possible done to the future timber crop. The future market for these younger trees is certain, so that the additional value of the young forests that are managed conservatively and protected is practically assured.

TIMBER INDUSTRIES.

Lumbering.

Aside from agriculture the production of lumber is the most important industry in eastern Kentucky. It began with the floating out of the larger walnut, yellow poplar, and oak. Lumber prices gradually advanced and the available supply of the larger trees cut for floating began to decrease. Greater transportation facilities were then offered by the building of railroads, so that at the present time more lumber is manufactured each year close to the source of supply than is floated down the streams to the larger mills on the Ohio river.

Yellow poplar and white and chestnut oak, have always formed the larger and most valuable part of the timber output, while ash, cucumber, and basswood are cut in considerable though diminishing quantities. All these species have a recognized standing in the lumber trade, and are in strong and steady demand. Walnut is eagerly sought for, but there is very little of sawlog size in the eleven counties. Hickory, chestnut, beech, maple, black oak, and other species are cut only in very limited quantities for the market, though the supply of these species is often excellent. In the lower part of the Big Sandy Valley, where the supply of timber is scarce, all kinds of lumber are cut for the Market. This closer cutting will also gradually take place throughout the whole valley as the present supply of timber decreases.

Stumpage values are fairly uniform. They vary, however, with the distance of the supply from the nearest railroad or stream, and with the grade of the timber purchased. A poor grade of oak timber close to the railroad often sells for as much as the best grades of oak that are located beyond a fair hauling distance from the railroad. Prices for yellow poplar and other softwoods are very uniform, as they are easily floated or splashed out of the small creeks and do not depend on the proximity of the railroad for their market value. In many localities trees other than white and chestnut oak, poplar, etc., are now considered of very little value, and no thought is given to their certain future as marketable timber.

of the present supply of standing white and chestnut oak is now owned by the local citizens.

This county affords some excellent areas for the establishment of forest reserves, to be under the control of either the State or the Government. The management of these reserves would serve as definite examples of conservative management for the benefit of the citizens and timber owners of these regions.

For a number of years lumbering operations will be confined to the marketing of the softwoods and the more mature white and chestnut oak. Single trees throughout the forest will be cut, leaving the trees of smaller diameters on the ground. These will in turn be cut only as better market conditions are offered. Under this system of cutting, special care can be given the younger trees, and as little damage as possible done to the future timber crop. The future market for these younger trees is certain, so that the additional value of the young forests that are managed conservatively and protected is practically assured.

TIMBER INDUSTRIES.

Lumbering.

Aside from agriculture the production of lumber is the most important industry in eastern Kentucky. It began with the floating out of the larger walnut, yellow poplar, and oak. Lumber prices gradually advanced and the available supply of the larger trees cut for floating began to decrease. Greater transportation facilities were then offered by the building of railroads, so that at the present time more lumber is manufactured each year close to the source of supply than is floated down the streams to the larger mills on the Ohio river.

Yellow poplar and white and chestnut oak, have always formed the larger and most valuable part of the timber output, while ash, cucumber, and basswood are cut in considerable though diminishing quantities. All these species have a recognized standing in the lumber trade, and are in strong and steady demand. Walnut is eagerly sought for, but there is very little of sawlog size in the eleven counties. Hickory, chestnut, beech, maple, black oak, and other species are cut only in very limited quantities for the market, though the supply of these species is often excellent. In the lower part of the Big Sandy Valley, where the supply of timber is scarce, all kinds of lumber are cut for the Market. This closer cutting will also gradually take place throughout the whole valley as the present supply of timber decreases.

Stumpage values are fairly uniform. They vary, however, with the distance of the supply from the nearest railroad or stream, and with the grade of the timber purchased. A poor grade of oak timber close to the railroad often sells for as much as the best grades of oak that are located beyond a fair hauling distance from the railroad. Prices for yellow poplar and other softwoods are very uniform, as they are easily floated or splashed out of the small creeks and do not depend on the proximity of the railroad for their market value. In many localities trees other than white and chestnut oak, poplar, etc., are now considered of very little value, and no thought is given to their certain future as marketable timber.

of the present supply of standing white and chestnut oak is now owned by the local citizens.

This county affords some excellent areas for the establishment of forest reserves, to be under the control of either the State or the Government. The management of these reserves would serve as definite examples of conservative management for the benefit of the citizens and timber owners of these regions.

For a number of years lumbering operations will be confined to the marketing of the softwoods and the more mature white and chestnut oak. Single trees throughout the forest will be cut, leaving the trees of smaller diameters on the ground. These will in turn be cut only as better market conditions are offered. Under this system of cutting, special care can be given the younger trees, and as little damage as possible done to the future timber crop. The future market for these younger trees is certain, so that the additional value of the young forests that are managed conservatively and protected is practically assured.

TIMBER INDUSTRIES.

Lumbering.

Aside from agriculture the production of lumber is the most important industry in eastern Kentucky. It began with the floating out of the larger walnut, yellow poplar, and oak. Lumber prices gradually advanced and the available supply of the larger trees cut for floating began to decrease. Greater transportation facilities were then offered by the building of railroads, so that at the present time more lumber is manufactured each year close to the source of supply than is floated down the streams to the larger mills on the Ohio river.

Yellow poplar and white and chestnut oak, have always formed the larger and most valuable part of the timber output, while ash, cucumber, and basswood are cut in considerable though diminishing quantities. All these species have a recognized standing in the lumber trade, and are in strong and steady demand. Walnut is eagerly sought for, but there is very little of sawlog size in the eleven counties. Hickory, chestnut, beech, maple, black oak, and other species are cut only in very limited quantities for the market, though the supply of these species is often excellent. In the lower part of the Big Sandy Valley, where the supply of timber is scarce, all kinds of lumber are cut for the Market. This closer cutting will also gradually take place throughout the whole valley as the present supply of timber decreases.

Stumpage values are fairly uniform. They vary, however, with the distance of the supply from the nearest railroad or stream, and with the grade of the timber purchased. A poor grade of oak timber close to the railroad often sells for as much as the best grades of oak that are located beyond a fair hauling distance from the railroad. Prices for yellow poplar and other softwoods are very uniform, as they are easily floated or splashed out of the small creeks and do not depend on the proximity of the railroad for their market value. In many localities trees other than white and chestnut oak, poplar, etc., are now considered of very little value, and no thought is given to their certain future as marketable timber.

Timber is usually purchased by the tree at a given diameter, by the cube, or all the merchantable timber within a given boundary and above a given diameter is purchased at an average price per tree. In only a comparatively few cases is standing timber purchased by the thousand feet board measure except in the counties below Martin and Floyd.

When all the merchantable timber in a given boundary is sold, the price per tree above 16 inches in diameter varies from \$1 to \$3, depending on the average size or grade of timber sold, or its nearness to market. Prices for oak vary from \$1.25 to \$3.50 per tree above 16 inches in diameter, which is equivalent to \$4.20 to \$6.50 per M feet B. M. when within a fair hauling distance from the railroad; beyond a fair hauling distance, oak sells at 65 cents to \$2 per tree, or \$1 to \$4 per M. Poplar varies from \$1 to \$15 per tree, or from \$3.50 to \$15 per M. irrespective of its location; the grading of prices paid for varying qualities and sizes is very close. Ash and cucumber follow poplar very closely in prices, while linn is cheaper than either. The market demand for hickory, chestnut, beech, maple, etc., is very light although they are used for local consumption and by a few wood working industries. Stumpage prices on these trees are practically the same, varying from 50 cents to \$2.50 per tree, or from \$1.25 to \$7.50 per M. The highest price paid for any one boundary of timber, so far as was noted, was \$22 per acre; this included all trees above 12 inches in diameter, at the rate of \$1 per tree, and amounted to about \$3 per M. feet for all species.

The two methods of exploitation are, (1) floating the more valuable trees down the streams to the band mills on the Ohio River, and (2) the manufacture of the lumber near the source of supply by the smaller mills.

(1). The trees usually taken for floating, are yellow poplar, ash, cucumber and basswood, with the better white and chestnut oaks. When practicable, the whole stem of the tree is taken from the woods to the creek; if the trees are too large or too heavy to be handled to advantage in this manner, they are cut into logs. The waste in cutting poplar and other softwoods for floating is comparatively small, as all of the merchantable length of the tree is used. The waste in cutting oak timber is greater, as large tops are left in the woods; sometimes, however, these tops are subse-

quently manufactured by the small local mills. All of the timber is peeled in the woods. It is then snaked to the nearest creek and splashed down to the larger streams, or hauled on wagons or tram cars to the nearest floating creek. The large rafts containing an average of 15,000 feet B. M. are made up in the river at the mouths of the smaller creeks. The cost of getting the timber to the river varies as follows:

Cutting, peeling and sliding, average per M	\$1.40
Snaking or hauling to creek or river, per M	1.10 to 7.35
Raft building, per M	.35

Rafting from the point of delivery on the river bank to Catlettsburg varies from \$2.50 to \$3.50 per M.

The waste incident to floating timber, which comes from weathering, discoloring, or the entire loss of separate logs, is about 10 per cent. It often happens, however, that logs become stranded or lie on the banks several seasons before they reach the market; this may increase the loss, for a single operation to 15 or even 20 per cent.

(2). In the manufacture of the lumber near the source of supply, the portable circular sawmill is used except in three or four instances, where band mills are now in operation. As a rule, the mill is located near the timber, or within a fair hauling distance. Frequently tram roads are built up the beds of the creeks, enabling the lumbermen to cut over the creek watershed more easily.

The species cut depend entirely on the demands of local or foreign markets, though but little beech, maple, gum and other less valuable trees are cut except as a supply for local markets. Smaller and more defective trees are utilized than is possible in cutting timber for floating, while many of the larger trees are handled with difficulty by the ordinary mills.

The cost of manufacture of lumber, not including stumpage, is as follows:

Cutting, per M	\$.75 to \$1.87
Logging to mill, per M	3.00 to 5.00
Sawing at mill, per M	3.00 to 5.00
Hauling to shipping point up to 15 miles per M	3.00 to 7.00

94 *Seventeenth Biennial Report Bureau of Agriculture.*

The cost of manufacture of ties was determined to be as follows:

Cutting (per tie)	-----	\$.04 to \$.05
Logging	“ -----	.05 to .15
Sawing	“ -----	.07 to .08
Hauling	“ -----	.04 to .25
		<hr/>
		\$.20 to \$.53

The daily capacity of the average portable mill is about 200 ties and 2,000 feet of lumber, or when cutting lumber entirely, about 5,000 feet; but few of them run more than a small part of the time.

The waste in milling as a result of a wide kerf and untrue sawing is often as high as 50 per cent, except in tie sawing, when the proportionate waste is greatly reduced.

The waste in manufacture by the band mill is much less, often not exceeding 10 per cent of the volume of the log. The smaller kerf and truer sawing of the band mill enables the sawyer to get 25 per cent more feet B. M. out of the same log than is possible with the average portable circular sawmill.

By careful observation it will be readily seen that in the majority of instances the damage done to the remaining part of the forest by the present methods of logging is greater than is necessary. The trees are felled with the idea of getting each tree out in the quickest and easiest manner. Attention is seldom paid to the young trees which are injured in the felling of the merchantable trees. In fact, a thrifty grove of young poles is generally considered a good place in which to throw the old trees, as they break the fall, and the old tree is less liable to break or split in falling. These young trees are of definite value and should be protected from injury by throwing the felled trees up the slope or in some other direction where there is an opening in the forest cover or where the small stuff on the ground is stunted and in poor growing condition. It will be found that the expense incurred by this care of the young forest is exceedingly slight and cannot be compared to the amount of damage done by the methods now in use.

Often wide strips of young timber are cleared out from the top to the base of a slope so the logs cut nearby may be snaked to this point and rolled down the slope. This method could still be employed provided the location of the slide is carefully selected so as to do the least damage to the valuable young forest cover. The pres-

ent wasteful methods may be changed materially if the owners of the forest land would sell their timber under the conditions that the young timber should be left uninjured as far as possible, and would supervise the cutting and logging of the timber in order to enforce the provisions of the sale. Under these conditions the mature timber could be sold as readily as now, and the cost of supervision would be more than paid for even in the present value of the young trees that would remain uninjured. Some changes should also be made in the present custom of using young trees of the more valuable species for skidding, for the building of tram roads, and for other uses in connection with logging operations. The less valuable young trees or less valuable species from the forester's point of view should be used in all cases, as the purposes for which the trees are used are only temporary. In one logging operation alone over 400,000 feet b. m. of material was used in construction. A large part of this amount was beech, hickory, and black oak, yet it was not uncommon to find more valuable material used for construction purposes of various kinds. The present custom of allowing the buyer to use all unmerchantable material necessary for logging operations without any additional cost should be abolished. In its place the owner should specify more closely that only the poorest grade of material may be used and should see that his provisions are carried out. If not, the owner of the forest should charge a proportionate amount for all of the more valuable material thus used and destroyed.

Stumps should be cut as low as the shape of the individual tree will allow, and all utilization of the trees cut for the market should be as close as practicable.

Market prices in this region will necessarily advance within the next few years, and the adoption of more conservative methods in lumbering will add more to the solution of the forestry problem than any other local factor.

The cubic foot is used as the basis of timber measurements in nearly every country of the world, but so far as is known, the only place where this is used in the United States is in the Big Sandy region. The log rule used in this region of Kentucky and in contiguous parts of West Virginia and Virginia, and known as the Big Sandy Cube Rule, uses the cubic foot instead of the board foot as its unit of volume.

It assumes that a log 24 feet long with an average diameter of 18 inches contains one cube per linear foot. From this standard log is deducted the formula $\frac{D^2 \times L}{324}$ wherein D. Table, p. 85 represents the diameter in inches at the middle of the log, L the length in feet, and 324 the square of 18. In the case of logs under 24 feet in length, the diameter is measured at the small end of the log, the same formula being used.

In small timber it will take from 80 to 90 cubes to equal 1,000 feet board measure, while in large timber as low as 65 cubes or even less will make a thousand; but taking the log run, it is generally counted that 70 cubes will saw 1,000 feet board measure, except that when oak is to be quarter-sawn, it is computed that 80 cubes are necessary to saw out 1,000 feet board measure.

So far as is known, this rule has never been published, so it is incorporated in this report as a matter of interest.

Hewn Ties.

Nearly half of the ties annually produced in eastern Kentucky are pole and split ties. These are hewn from the smaller trees, or in some cases split from the larger trees usually by the small land owners themselves, who realize practically all the profits from this industry. It is estimated that nearly a million hewn ties were shipped from this region in the past year, which represents a sum of over half a million dollars coming to the producers themselves.

The pole tie industry is not confined to any one part of the region from which the larger timber has been cut out. The great majority of ties are cut from white and chestnut oak. The bark is usually peeled from the latter for tanning purposes before the poles are hewn into ties. These two species, together with black walnut, furnish practically all the first-class ties. The black oak furnishes the great majority of second-class ties, though some butternut, beech, sycamore, etc., are made into ties in the lower counties, and are accepted at the same price. Chestnut ties form a class by themselves. They are bought in considerable quantities by some dealers and sold to street railway companies, but there is at present only a limited demand for them.

45
44
40
48
2)

Ironton, Ohio, is the best market for ties in this region, and prices vary according to the distance by rail or water from this point. The advantage enjoyed by this town can be seen from the fact that the freight rate on ties from Ironton to Cincinnati is less than half of what it is from Ashland to the latter place, though Ashland and Ironton are just across the Ohio River from each other.

Tie making as a business is followed by some men who make the ties and slide or snake them to a place where a wagon can get them. These men get $12\frac{1}{2}$ to 15 cents a tie for their work. Often, however, this part of the work is done by the owner of the timber. In other cases the timber is sold on the stump at 5 to 10 cents a tie, and sometimes even 15 cents, depending on the quality and accessibility of the timber. Hauling to the railroad costs on an average 2 cents per mile per tie. Ties are hauled from 10 to 15 miles, but the former figure is probably nearer the average distance. Floating ties down the smaller streams during high water and rafting to market is a cheaper method of transportation, but this entails a considerable risk of loss, so that it is not practiced as much as it otherwise would be. Nevertheless, large quantities of hewn as well as sawn ties are piled up along the banks of many streams each summer, and put into the stream and floated to market when high water comes. Prices at railroad and river points range from 50 to 65 cents for first-class ties, and 30 to 45 cents for second class ties. Chestnut ties are purchased at 25 to 35 cents each.

"Bank" ties are being got out along the Ohio River in Greenup County and shipped by water or rail to Pittsburg for use in the coal mines. They are hewn as well as sawn, and vary in size from 4 by 6 inches by 5 feet long to 7 by 7 inches by 6 feet long. Practically all species can be used for bank ties.

Hewn bank ties are only bought in two sizes, 5-foot and 6-foot ties, for which a price of 5 and 6 cents respectively is paid. At these low prices only a short haul is possible, so this industry cannot be very much extended at present.

The great advantages of the tie industry to this part of the country are (1), it is in the hands of the small land owners and poor farmers who need the money, and (2) it uses up a great deal of small and poor quantity timber for which there is no other market. The supply of small timber suitable for first-class ties is becoming very limited, but timber suitable for second-class ties will be found

throughout the region for many years to come. Black oak and beech now form nearly half the forest of the six northern counties, and with an ever increasing number of railroads treating their ties, this industry will probably last longer than any other one that is dependent on the forests in the region.

The production of ties is destined to be only a side issue, though a very important one, in the scheme of management for these forests. The chief object will be to grow more valuable material. White oak will be saved for stave timber, and walnut for furniture, etc., but some chestnut oak, as well as the less valuable parts of other trees, will probably be best used for ties. However, the black oaks will form a large part of the forest in the lower counties for a long time to come, and the production of ties from these species should allow them to be marketed at an early age and thus give a better opportunity to encourage the more valuable species.

Stave Industry.

Both sawn and split oak staves and heading form a large percentage of the yearly cut of white and chestnut oak. White oak only is used in making barrels and kegs for beer, whiskey, and other spirits, while both white oak and chestnut oak are used for oil staves and heading. The culls and "cut offs" from the stave mills are sold for the manufacture of lard tierces and kegs.

The trees purchased for the manufacture of whiskey staves are very carefully selected. Frequently whole trees are left after being cut down because the amount of worm holes in them completely destroys their value for whiskey staves.

As a rule no trees which have less than 20 feet clear lengths are taken, while the average clear length of about 10,000 trees cut was found to be about 28 feet. In the virgin white oak forest the diameter of all stave trees is over 20 inches diameter inside bark. Because of careful selection, only 1 per cent of the trees purchased are discarded in cutting, while if the whole stand of oak timber was purchased as much as 50 per cent of the timber would be of no value for whiskey staves. The grade of both white and chestnut oak varies greatly with the direction of the slope of the hills as well as with the general locality of the forest. Trees on the north and west slopes yield

a better grade of staves than trees on the east and south slopes; the latter are more brash, are closer grained, and are more apt to be defective. White oak staves cut along the creeks in the Upper Sandy region graded about 10 per cent less than No. 1.

Chestnut oak is used only in making oil staves, and is invariably of a poorer grade than the white oak, so that even with careful selection the grade of the combined output of white and chestnut oak oil staves is about 15 per cent lower than the grade of white oak oil staves from the same region. This percentage is on the basis of 2,500 trees cut, of which 60 per cent were chestnut oak.

The average tree will yield about .6 of a cord of stave bolts, and each cord of bolts will cut from 400 to 500 staves; one cord of bolts is also the equivalent of about 500 feet B. M.

The average cost per thousand at the railroad for heading and all kinds of sawn staves varies with the length of haul from the woods to the mill and from the mill to the railroad; the grade of the timber cut; and the cost of building roads in the woods and keeping the roads from the mill to the railroad in fair hauling condition. The cost for cutting and manufacture is fairly uniform, making the cost per thousand staves and heading at the railroad from \$25 to \$31.50. This cost may be divided as follows:

Stumpage, per thousand staves (including branding)	\$3.50 to \$5
Cutting and hauling stave bolts to mill, per M-----	\$4.50 to \$6
Sawing at mill and piling on yard, per M-----	\$3.00 to \$5
Hauling from mill to railroad, 4 to 20 miles (varies	
from a rate of \$.35 to \$.85 per mile)-----	\$2.75 to \$12

The cost of building roads, loading cars at the railroad, grading staves for shipment, and interest on the money invested, is not counted in the above items. The market price for staves will average \$40 per thousand.

As a rule, staves are stacked on the yard three months before they are hauled to the railroad in order to allow for proper seasoning, when one thousand staves will weigh from 3,000 to 3,500 pounds.

Split staves are floated out of a large number of the creeks each year, or are delivered at railroad points within a fair hauling distance. These staves are manufactured by the owners in small lots as a rule, while occasionally small boundaries of timber are bought for the purpose. Only the best trees are used and a very large percentage of the volume of each tree cut is left on the ground. It is safe

to say that at least 25 per cent more of the tree is wasted in the manufacture of split staves than in the manufacture of the same trees into lumber, while the average tree will cut much less than one-half the number of split staves than it would of sawn staves.

Split staves vary in length from 26 inches to 54 inches, while unusual lengths up to 12 feet are also cut. The cost of manufacture of split staves of the usual lengths varies from \$10 to \$30 per thousand, delivered on the banks of the creeks. This cost does not include stumpage values. Their market price on the creek banks varies from \$25 to \$75 per thousand. Unusual lengths up to 12 feet are worth up to \$1.65 each, 10 cents being added for each additional half foot from 6 feet up to 12 feet.

As the whole stave industry is now necessarily carried on, a large percentage of the oak supply used in the manufacture of staves is being wasted. Utilization of the trees cut can not be as close as could be the case with better transportation facilities; that is, in some cases more staves could be manufactured from the same boundary of timber, or the discarded trees and tops of trees which now decay on the ground could then be manufactured into lumber or ties.

Actual cutting operations are of less damage to the remaining stand of timber than in any other wood-manufacturing industry, as the trees are taken out in blocks and not in the log.

Practically the only recommendations that can be made in regard to the present method of operations is that the trees be more carefully felled with reference to the vigorous growing young trees that surround the mature timber. The place for felling the old tree should be selected so as to do the least possible damage to the young growth, in addition to felling the tree where the blocks may be rolled out with the least trouble. With the above exceptions, the present method of getting out stave timber does very little damage to the young growth in the forest.

The output of sawn staves from the Big Sandy valley will probably continue at the present rate for about five or six years, as the greater number of the large stave mills have timber enough to supply them for that length of time. This period will then mark the end of the output of sawn staves at the present rate on the Big Sandy watershed, as the remaining part of the timber supply from which staves can be made is now in the hands of other lumber industries.

White oak is the only tree which can be used in a large part of the

stave industry. The present supply is everywhere being rapidly exhausted, and in the future the stave men will be obliged to use much smaller trees than they are now doing. This part of the Appalachian region is especially suited to the growth of white oak, and is destined to produce a large part of the future supply. With the exhaustion of the virgin timber the price of white oak is bound to increase, so that owners can well afford to hold white oak timber of small sizes until it is large enough for staves.

OTHER FOREST INDUSTRIES.

Hickory Spokes.

Like the making of ties, the splitting of hickory spokes is in the hands of the small farmers and land owners. Second-growth hickory is very desirable for spokes, but the forest grown hickory is chiefly used in this region, and the straight-grained larger trees are more suitable for this purpose. The spokes are split out at the stump, three men being able to turn out from 1,000 to 1,200 spokes a day. These split billets are worth from \$10 to \$12 per thousand delivered at the railroad station or the spoke mills. Two of these spoke mills are now operating in the region, turning the square billets into the finished spokes, which are shipped direct to the carriage manufacturers.

The exploitation of spokes and handles is carried on consecutively on some operations, the spoke makers going through the boundary, taking all hickory suitable for this purpose, while the remaining timber is culled for handle material.

Hickory Handles.

Hickory for handles is obtained in small lots from the farmers, who haul it to the railroad points or the mills in the form of logs, bolts, or split billets. Logs are usually measured by the thousand board feet, billets by the thousand pieces, and bolts either by the cord or by the number of billets the wood is estimated to cut out. The price varies very much according to quality.

Three natural grades are distinguished: (1) "Red," or heartwood, (2) white forest-grown, and (3) second-growth, which is always white. The price varies according to grade from \$20 to \$50 per thousand pieces on board cars. Hickory stumpage is now worth from \$1 to \$2 a cord, or \$2 to \$4 per thousand pieces or per M board feet, depending on its quality and location.

All timber is being shipped to Huntington, W. Va., and other Ohio River points outside of this region, to be manufactured into handles.

The physical properties of hickory make it specially adapted for

use as spokes and handles, and no substitute for it has as yet been found for these purposes. In this region as well through the greater part of this country, old forest-grown hickory is chiefly used in their manufacture.

The future demand for hickory seems more certain than for most other species, and the supply will have to come from the second growth, which is more valuable than the old growth. This region is admirably adapted to the production of hickory, and farmers and other timberland owners will do well to encourage the growth of this tree in their forests as much as possible. The excellent hickory reproduction now found in the forest forms the basis of a crop that will be of definite future value and should be protected as far as possible.

Nail Kegs.

Owing to the large iron industry in and near this region, a considerable demand has arisen for nail kegs. In some cases the iron companies manufacture their own kegs, while in other instances independent parties run small stave and heading mills and sell their products in the open markets. All species occurring in any amount in this region are used. A price of \$3.50 to \$4 a cord is paid for cordwood delivered at the mill or on board cars. Sizes down to 6 inches in diameter or even less, are accepted. The harder woods if dry have to be steamed before they can be cut, but the softer woods and green timber are sawn without this preparation. Small knots do not affect the value of wood for kegs. Much of the small second-growth in the northern counties is cut into cordwood for this purpose. It is estimated that on an average 25 sets of staves and heading can be cut from one cord of wood, with only 15 per cent of waste material. The present price does not admit of hauling the cordwood any great distance, but for the owners near transportation facilities it furnishes a market for otherwise unmerchantable material and so allows of very close utilization.

In favoring the better species, such as yellow poplar, hickory, or white oak, it is often advisable to cut out the inferior species, such as beech, black gum, or the black oaks, if a market can be found for them. An industry like this furnishes such a market, and allows the practice of practical forestry. If the least valuable species are thinned out and the valuable trees are left and given more room to grow, the quality and value of the forest is improved.

Poles.

Chestnut poles are obtained in small numbers throughout the region and floated or shipped to market, but the supply is practically exhausted in the lower counties. There are still plenty of poles in the more remote regions of the upper counties, but local prices have not yet made it advisable to exploit these to any great extent.

Chestnut grows rapidly up to a diameter of 12 inches or 15 inches on suitable situations. Two crops of poles could be produced in the time it would take most species to make one crop of saw-timber. The growing of poles should therefore be one of the objects of forest management in the upper region. Chestnut sprouts should be taken care of and thoroughly protected from fire, for even a small fire will kill sprouts an inch or so in diameter and in that way delay the production of a crop of poles for ten years or more.

Posts.

Locust and chestnut posts are shipped only from the more northern counties, though there is a small local demand for them all over the region. In Greenup and Carter counties locust for posts is cut mostly from second-growth, coming up in old fields. Chestnut posts are cut from small growth, but can not be hauled far on account of the comparatively low price. In Greenup County locust posts bring 12 cents each, and chestnut posts 6 to 8 cents each, delivered at the railroad.

Where a good stand of locust has come in on pastures and old fields the farmer should consider whether the growth of the locust will not pay him better than spending so much time and money in re-clearing the land for two or three crops of corn. Locust in such situations grows rapidly, and should be encouraged on areas well suited to it.

Summary.

Market conditions for the disposal of all forest products are now very favorable throughout the greater part of the region. The demand for all minor forest products together with the limited supply of the

better grades of timber has led to a closer cutting of the forest than is advisable for the perpetuation of a steady output, especially in the more northern counties. This has also resulted in an increasing preponderance in the forest of the less valuable species.

In order to prevent or correct this deterioration of the forest a continual foresight should be exercised in all lumbering operations, whether the timber areas being cut are virgin or heavily culled lands. It should be constantly kept in mind that the forest is a permanent institution, and that by improving its productive capacity, its value to the owner and to the state is increased.

Certain general precautions such as, the selection of seed trees, the care of young growth, thorough utilization of the trees cut and the prevention of unnecessary waste should be observed whenever lumbering operations are carried on. Seed trees of poplar, white oak, ash, walnut, and other species that are best adapted to any given locality should be left wherever possible, so that openings will be seeded up with the better species. Young thrifty trees, especially of the more valuable species should be protected and saved for a future crop. Many owners seem to place no value on young trees too small for the present market. Straight young poplars or white oaks will be cut to build a hog pen or mend a fence, when black oak, maple, or beech would do as well, while thousands of young walnut trees are cut for ties every year because they are as yet too small to make saw timber. When the owner sells the timber on the ground and the purchaser logs it, there is often a great deal of unnecessary waste. The purchaser is usually allowed all timber necessary for logging purposes, without cost or other restriction, and one sees tramroads made out of poplar, lynn, ash, and other valuable poles because they are straight and easy to work, and grow close along the line.

In making sales of timber, land owners should insist that only the least valuable species be used for construction of trams, roads, bridges, slides, etc. And in order to prevent waste in the use of these trees a nominal price should be charged, for example, 25 cents a thousand board feet for all timber over 12 inches at the middle of the stick, and 10 cents per 100 linear feet for all poles. An arrangement like this would aid in the protection of the young growth, and make the purchaser realize that even young trees have a value.

The methods employed, more especially by small operators, are often unnecessarily wasteful. By felling a tree with an ax, one or

two feet of the best part of the tree is wasted in the spur and in chips, while by cutting the tree high up very often as much more is left in the stump. All trees except those that are hollow or doty at the stump should be cut with a saw, and no stumps should be cut higher than is absolutely necessary. The height of the stump should never exceed the diameter of the tree at the top of the stump.

Another place where waste is frequent is in the tree tops left in logging. In cutting timber for floating, usually only the best quality of timber has been used, and the knotty top logs are usually left in the woods to rot. In many cases this has been unavoidable owing to the lack of a market for second-class logs. These conditions are now partially changed, and the tops can be made into saw timber or ties and a market found in nearly all cases. In some logging operations great waste is caused by rolling logs down the slopes in order to get them to lower levels in the easiest manner. Trees and small seedlings are uprooted and destroyed in wide strips, when by using a narrow slide, much of this waste might be obviated.

In addition to close utilization of the timber cut, protection to the trees left standing and to the reproduction is most important. This should be insisted upon in all contracts of sale or logging. Especial care should be required in felling not to injure the surrounding trees more than is absolutely necessary. The cutting crews soon learn to fell a tree where it will do the least damage. Young vigorous specimens of desirable species that sprout vigorously such as chestnut, lynn, and locust, should not be cut in the late summer or early fall, as this weakens the roots, and the sprouting power of the tree is very much reduced. The more mature trees, however, are less able to produce a valuable sprout growth so that very little practical benefit would be derived from changing the present time of cutting the mature timber.

OTHER INDUSTRIES DEPENDENT ON THE FORESTS.

Agriculture.

Eastern Kentucky cannot be called an agricultural region, as the greater part of the land is really more suitable for the production of timber than it is for the growing of farm crops. With the first settlement of the country the bottom lands along the creeks and the lower slopes of the coves were the first to be cleared. As the soil became impoverished and more space was needed for crops and grazing in order to provide a living for the rapidly increasing rural population, the clearing gradually extended up the slopes till at the present time the farm land often reaches the tops of the ridges. Many slopes are now being cultivated entirely by hand, because they are too steep to be cultivated with a horse.

These steep slopes often yield only three or four crops when they have to be abandoned, except for pasture land, because of the rapid washing away of the shallow fertile soil. Often large corn fields may be seen on hillsides that are cut up into narrow strips only a few rods in width by the deep gullies that are formed by constant erosion. Erosion stops only when a rock bed is reached or when the rocks left by the washing away of the soil make a bed in the bottoms of the gullies, which are often from four to eight feet deep. It is practically impossible to prevent erosion on the steep cleared slopes, whether they are cultivated or used as pasture land. The only way to keep these hillsides from being so rapidly denuded of their soil is to refrain from clearing at least the upper part of the slopes.

If these upper slopes are kept in forest and are protected from fire so that the accumulation of leaves remains, the rain is temporarily held in the sponge-like ground cover and soaks gradually into the soil or runs off the surface much more slowly than if the slope is cleared or the leaves and twigs have been destroyed by fire. With a more gradual runoff of surface water, the wash on the lower part of the slopes will be greatly decreased. The steeper slopes now used as farm land should be reforested by planting the most desirable trees, or the forests

should be allowed to again cover these slopes by natural seeding from the surrounding forest trees.

Agriculture is the most important industry of the people who gain about half their living by it. Aside from the staple crops, such as corn, tobacco, and sorghum, more or less stock is raised throughout the region. Hogs and cattle are generally allowed to run loose, so that every farmer has to fence his crops well enough to keep the stock out.

The effect which this method of pasturing has on the forest, is a most important consideration. Hogs destroy the "sweet mast" in the fall and feed on the roots and stems of the young seedlings; in the spring the "bitter mast" which has been frozen or has begun to sprout, is destroyed, leaving no chance whatever for the regeneration of the forest cover. Cattle browse on the seedlings and sprout reproduction, for there is often little else for them to eat in the forest. The soil cover is broken up, greatly injuring the moisture conditions of the forest soil. All of these agencies working against the establishment of the new forest crop, favor the encroachment on the forest of undesirable species, and make the deterioration of the forest as a whole more rapid. These serious injuries may be prevented by the enforcement of a good stock law, which would allow each farmer to protect his growing trees and keep all stock out of his woods if he so desired.

Mining.

Coal mining is carried on to a greater or less extent throughout the length of the Big Sandy region. The mines are all in the seams which occur above or near the level of the streams. Both bituminous and cannel coal are found, and much of it is of excellent quality. Mining timbers are usually cut by the companies themselves, from the land which they control, so no general market has yet been created for this class of timber.

With an approximate output of 470,000 tons of coal from five counties in this district and an average use of 45 cu. ft. of mining timber to the hundred tons of coal, approximately 210,000 cubic feet of mining timber is used per year. At an average value of 5 cents per cubic foot for sawn and pole timbers, about \$2,000 is thus expended in each county for mine props annually.

To grow this amount of mining timber at the present estimated rate of growth, from 10,000 to 20,000 acres of forest land would be required. The larger mining companies are beginning to realize the importance of having a supply of timber for future mining purposes and some of them feel strongly the necessity of conservative management for their holdings. This may be done by following the recommendations which are given in this report.

FIRE PROTECTION.

The character of the country and the situation of the cleared land is such as to form excellent protection from fire. As a rule the forests cover the upper parts of the slopes, while the cleared land follows the streams and is on the lower slopes. The ridges are steep and narrow, so that the forest areas are usually in long narrow strips. Fences surround the cleared land and often extend to the ridges and fire is ordinarily kept out of the woods as protection for the fences.

There is a general opinion among the people that forest fires injure the woods, and there is a remarkably small percentage of the forest that has been recently burned over. Nevertheless, the extent of the injury to the forest by fire is seldom, if ever, realized. The green growth of summer and the snows and rains of winter prevent serious fires at these seasons, but during the usually dry months of April and May before the leaves come out, and in October and November, after the leaves fall, fires are liable to break out and do great damage. Often the larger trees appear to be uninjured by fire, and to the casual observer it appears that such fires do no harm. But seedling reproduction and sprout growth is killed to the ground, so that after repeated fires there is only old timber left on the area. Much of this timber is often dry or rotten at the stump, caused in part or entirely by fire. When this mature timber is once logged off, there is no second crop to take its place. Fire has destroyed the continuity and permanence of the forest.

Again by destroying the leaf cover, the soil is deprived of the fertility which comes from the decaying vegetable matter, the moisture content of the soil is decreased by the ease of evaporation, and erosion takes place much more easily. If the woods burn in May, after the sap starts to rise, usually many or all of the larger trees are killed, and the whole usefulness of the forest destroyed.

The first thing the State should do, is to protect her forests from fire. This can best be done through an efficient fire warden system. Kentucky already has some good fire laws, but without the machinery for working them they are of very little use. The growing public sentiment in eastern Kentucky against forest fires should be strengthened and thus aid in making a fire warden system very effective and the fire laws comparatively easy to enforce.

The citizens themselves, however, can do much to prevent and control forest fires. Prevention of fires is much cheaper and more effective than to let them start and then fight them.

A few simple rules for prevention of fires and for fighting them if they do start may be found useful. They are given below :

1. Don't burn brush during prolonged dry weather, especially in the spring.

2. Don't burn off the new ground in a high wind.

3. Notify the owner of adjacent woodland before burning off the new ground.

4. Don't let a fire get into a standing or down dead tree, as it is hard to extinguish and after smouldering for a while is easily spread by the wind.

5. Burn off the broom grass pasture soon after a rain, before the woods have dried off enough to burn.

6. Extinguish all camp fires, smouldering bee trees, or coon trees before leaving them.

7. If a small fire is discovered one man can often put it out by prompt action, but if a fire has a dangerous start, sufficient help should be secured at once to get it under control before it has gained too great headway.

8. No attempt should be made to beat out a fire from the front, either when burning up a hill or with the wind, but it should be attacked at each side and the front gradually narrowed.

9. The best place to fight a fire is at the top of a ridge or at the bottom of the slope near a stream.

10. A bad fire may be stopped in front by back firing. This, when necessary, may be done from a trail, road, or gully, or from a narrow strip raked clear of leaves.

It is recommended that forest fire notices be printed and posted throughout forest lands for the purpose of obtaining the co-operation of individual owners in the prevention of forest fires. These notices should contain cautions in regard to the starting of forest fires; should explain the benefit to be derived by the people as a whole and especially by the wood-working industries in the prevention and control of forest fires; should give quotations from the State law in regard to forest fires; and should ask for the hearty co-operation of all individuals in the protection of the forests. A copy of a forest fire poster used on the National Forests accompanies this report.

PROTECTION FROM STOCK.

In parts of eastern Kentucky stock is allowed to run loose all through the woods and every man has to fence his crops to protect them from his own and other peoples' cattle and hogs. But the gradual deterioration of the range and the growing scarcity and value of timber suitable for making rails, besides other considerations, has brought about the introduction of the stock law in the better settled districts. This law makes every owner responsible for his own stock and compels him to keep them under fence. The chief disadvantage of this from the settlers' point of view is that the mast and pasture in the unfenced forest can not be utilized.

The advantages to the farmer in addition to the protection of the forest, are many. By preventing the intermingling of all kinds of stock, contagious diseases such as hog cholera and Texas fever (the latter only indirectly contagious through the spread of the tick) have been practically stamped out where the stock law is in force. The farmer then always knows where his cattle are and does not have to spend hours and sometimes days hunting them. The loss of calves and other young stock is also very much reduced. The expense of fencing is reduced to a minimum, saving thereby much valuable timber, which would otherwise have to be used for rails. Hogs destroy most of the seeds and seedlings in our hardwood forests, and by rooting in the leaves injure the moisture conditions of the forest soils, while cattle browse on and ruin much of the sprout reproduction. This serious injury is prevented by the stock law.

Perhaps the greatest benefit the stock law works, however, for the forest is an indirect one. Where cattle roam the woods, it is generally thought necessary by those who do not own the land, to burn off the woods every season to improve the pasture. This is ruinous to the forest. While the owners of the forest do not approve of this practice, and the laws prohibit setting fire to the woods, it is generally impossible to prevent it as long as the incentive to burn off the woods remains. By keeping cattle out of the woods no object is to be gained by burning and the practice will gradually cease.

It is, therefore, strongly recommended that a stock law be passed for the whole State. This method is preferable to that of making

stock laws for a definite region or county, as sectional feelings will be eliminated in the enforcement of a uniform law. Some localities may be opposed to such a law when first put into operation, but it is confidently asserted that with a year or two of experience the citizens will realize its great benefits, for few districts, after having once been under the operation of a stock law, ever willingly give it up.

PLANTING.

In the more northern counties, where from 50 to 80 per cent of the total area has been cleared for agricultural purposes, much of the cleared land has been abandoned and is now producing absolutely nothing.

After the land is cleared, it is usually cropped year after year, erosion going on at the same time, until the soil is too poor and too much washed to pay to cultivate, when it is usually turned out to pasture and gradually abandoned. It will then grow up in shrubs such as sassafras, sumach, papaw, briars and weeds. Gradually some forest trees such as sycamore, yellow poplar, pines, etc., creep in, provided seed trees are nearby. After ten or twenty years it is sometimes cleared up again, and two or three more crops taken off only to be once more abandoned to grow up to briars and bushes. This land is a burden to the owner as it produces practically no revenue. The trees on it are usually so scattered, generally only a few to the acre, as to be of little value, and probably the best way to make such land productive is to plant it again to forest.

Hickory grows naturally on all soils and slopes in the region and can be cut for handle wood at a comparatively small size. Sycamore comes up on old fields all over the northern counties, and should, if planted, find a ready market as ties or poles. The expense of re-foresting these old fields would involve only the first cost of planting, and the regular protection from fire.

As no commercial planting has been done in this region, it is not known what it would cost or what the profit would be. It is recommended that experiments be carried on by the State to settle these points, and to determine which species are most suitable for planting. The acquisition of lands by the State is also advocated, and on these lands such experiments should be carried on under the direction of the State Forester.

The mineral rights on much of the land is owned by large coal companies, and their contracts often give them the virtual ownership of all timber below 12 inches in diameter. On such lands, of course, it would not be advisable for the farmer to plant; in fact, forest management of any kind in such cases would be impracticable, except

possibly by the company, after all the large timber had been removed. But where such companies own denuded lands and non-productive old fields, it may be found by experiment that they can afford to plant trees and grow timber for use in the mines.

TAXATION.

The present valuation and rate of taxation on forest property seems fair and just and should remain as it is, as far as possible. When a rise in the valuation of other than forest property becomes necessary because of the greater development of the resources of the region, the valuation of forest property should be increased with great caution in order that the forest lands may be held to advantage for the production of future timber crops. A timber crop is marketed only after the young growing timber has been held for a long term of years during which time the forest has been yielding only a very slight revenue, if any, to the owner. If the valuation of the forest or its rates of taxation goes beyond a comparatively low limit, the holding of forest land for a second crop of timber is impracticable or nearly prohibitive. This condition has prevailed in many other States where now the problem of taxation is a difficult one to solve.

In view of these facts it is recommended that taxation of forest lands in this region be kept as nearly on its present basis as possible. If a readjustment of valuation should become necessary, care should be taken not to impose taxes that will prevent the profitable holding of forest lands by the private citizen for the production of timber.

RECOMMENDATIONS.

The limited study on which this report is based, clearly shows that certain definite policies must be put into effect if the forests of the State of Kentucky are to be made permanent and steadily productive. These policies are summarized below. Changes and additions may be made from time to time as a more extended study of conditions throughout the State shows the need. The more important features are practically certain, however, to apply throughout the State both now and in the future.

1. It is strongly recommended that the State Board of Agriculture, Forestry and Immigration appoint a technically trained and experienced forester to take charge of all State work. His duties should be—(1) to promote forestry education in the State; (2) to supervise and direct work on all the State forest lands; (3) to co-operate with all private owners of forest property throughout the State by giving them advice and assistance in the care and management of their woodlands, and (4) to act as Chief of the fire warden system.

2. Forest lands which are owned by the State or which shall later come into its possession either by gift, delinquent taxes, purchase, or in any other way, which are more valuable for forest purposes than for anything else, should be held and administered by the State as State forests.

The policy of owning forest lands is just as important for a State as for the Nation and each has its place. As the regulation of the water supply on streams which chiefly affect other States, is a function of the national government, and should not be left to the States themselves, so the preservation of the forest on the smaller streams, the regulations of which affect chiefly State industries, can not be left to the individual but should be recognized as one of the duties of the State.

Again, the industries of the State and the needs of the inhabitants require a certain minimum supply of timber. The State should not depend on the private citizen to furnish all of this, but should itself be the controlling factor, not necessarily itself furnishing the larger part of the timber but fostering a reserve supply and encouraging and assisting the individual to produce as much as possible.

These State forests should be protected from fire, by men who are employed for that purpose, and should be administered to serve as examples and centers of practical forest management.

3. The State should establish experimental planting stations for the different regions, on State forest lands or carry on these experiments in co-operation with private land owners. Their purpose should be—(1) to determine whether forest planting will pay the average farmer or timberland holder; (2) to ascertain what species are the most desirable for the different localities and situations; and (3) to determine the best and cheapest methods of carrying on the work. Later, if found advisable, seedlings might be raised to furnish the farmers with young trees for planting at cost prices.

4. A fire-warden system should be established for the State. The duties of the fire-warden should be—(1) to prevent forest fires by adequate patrol and the posting in public places of fire-warning notices; (2) to extinguish fires after they have started; (3) to cultivate and promote a sentiment in each locality in favor of forest protection; and (4) to look after and police the State forest reserves. Adequate fire laws should be enacted and enforced, so that neither individuals nor corporations could set fire to and burn, either willfully or negligently, other people's property.

APPENDIX.

List of Trees and Shrubs noted in the Region.

TREES.

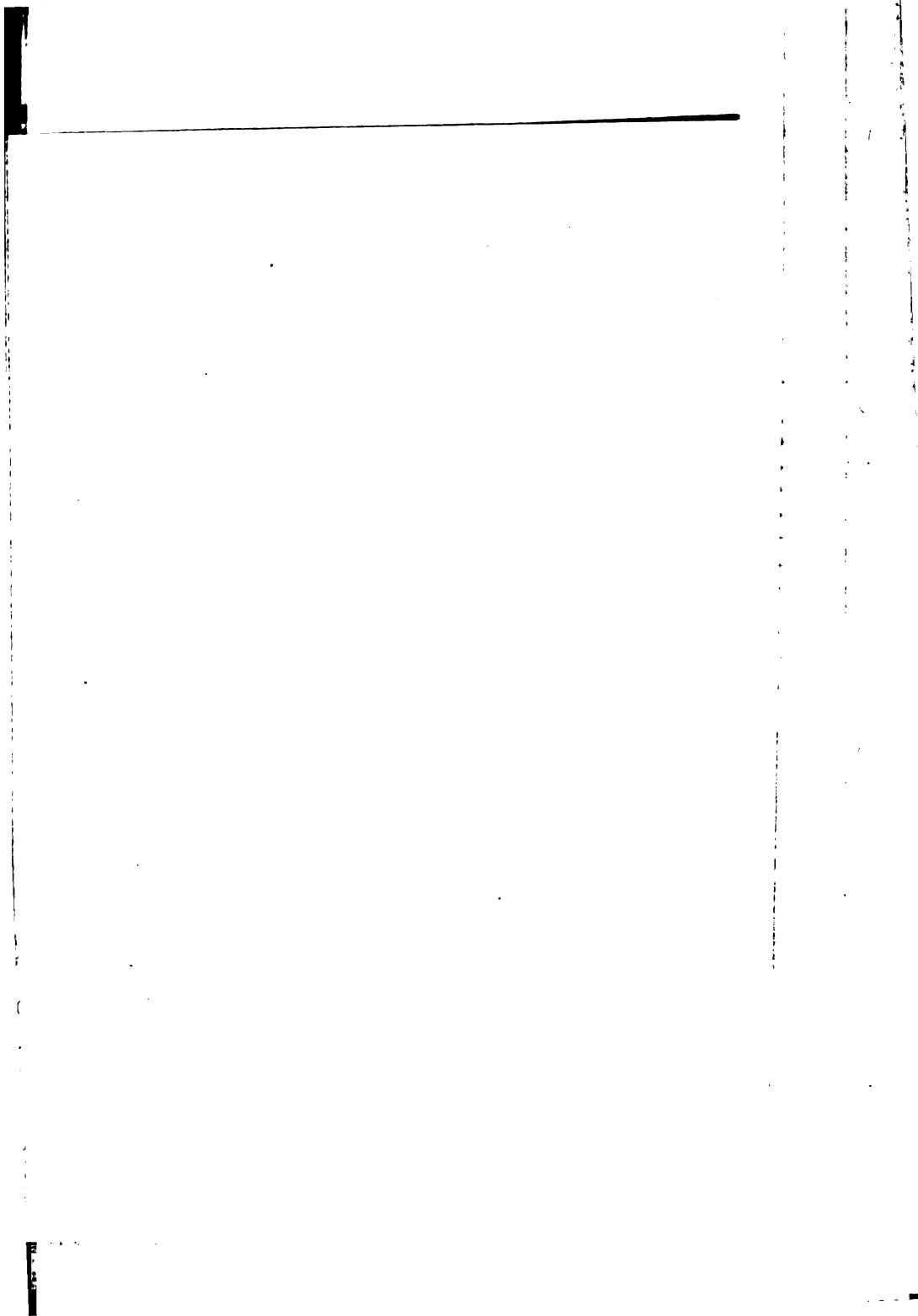
White pine	<i>Pinus strobus.</i>
Pitch pine	<i>Pinus rigida.</i>
Shrub pine	<i>Pinus virginiana</i>
Shortleaf pine	<i>Pinus echinata.</i>
Hemlock	<i>Tsuga canadensis.</i>
Red cedar	<i>Juniperus virginiana.</i>
Butternut	<i>Juglans cinerea.</i>
Black walnut	<i>Juglans nigra.</i>
Bitternut (hickory)	<i>Hicoria minima.</i>
Shagbark (hickory)	<i>Hicoria Ovata.</i>
Mockernut (hickory)	<i>Hicoria alba.</i>
Pignut (hickory)	<i>Hicoria glabra.</i>
Willow	<i>Salix canadensis.</i>
Balm of Gilead	<i>Populus balsamifera.</i>
Cottonwood	<i>Populus deltoides.</i>
White poplar	<i>Populus alba.</i>
River birch	<i>Betula nigra.</i>
Yellow birch	<i>Betula lutea.</i>
Sweet birch	<i>Betula lenta.</i>
Ironwood	<i>Ostrya virginiana.</i>
Hornbeam	<i>Carpinus caroliniana.</i>
Beech	<i>Fagus atropunicea.</i>
Chestnut	<i>Castanea dentata.</i>
White oak	<i>Quercus alba.</i>
Post oak	<i>Quercus minor.</i>
Bur oak	<i>Quercus macrocarpa.</i>
Chestnut oak	<i>Quercus prinus.</i>
Chinquapin oak	<i>Quercus acuminata.</i>
Red oak	<i>Quercus rubra.</i>
Scarlet oak	<i>Quercus coccinea.</i>
Black oak	<i>Quercus velutina.</i>
Spanish oak	<i>Quercus digitata.</i>

Pin oak -----	<i>Quercus palustris.</i>
Shingle oak -----	<i>Quercus imbricaria.</i>
Slippery elm -----	<i>Ulmus pubescens.</i>
White elm -----	<i>Ulmus americana.</i>
Hackberry -----	<i>Celtis occidentalis.</i>
Red mulberry -----	<i>Morus rubra.</i>
Cucumber-tree -----	<i>Magnolia acuminata.</i>
Umbrella-tree -----	<i>Magnolia tripetala.</i>
Yellow poplar (Tulip tree) -----	<i>Liriodendron tulipifera.</i>
Sassafras -----	<i>Sassafras sassafras.</i>
Sweet gum -----	<i>Liquidambar styracifula.</i>
Sycamore -----	<i>Platanus occidentalis.</i>
Service berry -----	<i>Amelanchier canadensis.</i>
Wild plum -----	<i>Prunus americana.</i>
Black cherry -----	<i>Prunus serotina.</i>
Honey locust -----	<i>Gleditsia triacanthos.</i>
Coffee tree -----	<i>Gymnocladus dioica.</i>
Black locust -----	<i>Robinia pseudacacia.</i>
Ailanthus -----	<i>Ailanthus glandulosa.</i>
Holly -----	<i>Ilex opaca.</i>
Striped maple -----	<i>Acer pennsylvanicum.</i>
Sugar maple -----	<i>Acer saccharum.</i>
Silver maple -----	<i>Acer saccharinum.</i>
Red maple -----	<i>Acer rubrum.</i>
Box elder -----	<i>Acer negundo.</i>
Ohio buckeye -----	<i>Aesculus glabra.</i>
Basswood -----	<i>Tilia americana.</i>
White basswood -----	<i>Tilia heterophylla.</i>
Flowering dogwood -----	<i>Cornus florida.</i>
Black gum -----	<i>Nyssa sylvatica.</i>
Sour wood -----	<i>Oxydendrum arboreum.</i>
Persimmon -----	<i>Diospyros virginiana.</i>
Black ash -----	<i>Fraxinus nigra.</i>
White ash -----	<i>Fraxinus americana.</i>
Comon catalpa -----	<i>Catalpa catalpa.</i>

SMALL TREES AND SHRUBS.

Pussy willow -----	<i>Salix discolor.</i>
Hazel -----	<i>Corylus americana.</i>
Alder -----	<i>Alnus nigosa.</i>

Buffalo nut	<i>Pyrularia pubesa.</i>
Papaw	<i>Asimina triloba.</i>
Virgin's bower	<i>Clematis virginiana.</i>
Leather flower	<i>Clematis viorna.</i>
Spice bush	<i>Benzoin benzoin.</i>
Wild hydrangea	<i>Hydrangea arborescens.</i>
Witch hazel	<i>Hamamelis virginiana.</i>
Rose	<i>Rosa sp.</i>
Purple flowering raspberry	<i>Rubus odoratus.</i>
Black raspberry	<i>Rubus occidentalis.</i>
Blackberry	<i>Robus sp.</i>
Sweet crab	<i>Pyrus coronaria.</i>
Cockspur thorn	<i>Crataegus crus-galli.</i>
Red haw	<i>Crataegus coccinea.</i>
Red bud	<i>Cercis canadensis.</i>
Prickley ash	<i>Xanthoxylum americanum.</i>
Black sumach	<i>Rhus copallina.</i>
Staghorn sumach	<i>Rhus h hirta.</i>
Smooth sumach	<i>Rhus glabra.</i>
Poison ivy	<i>Rhus radicans.</i>
Poison sumach	<i>Rus vernix.</i>
Strawberry bush	<i>Evonymus americana.</i>
Wahoo	<i>Evonymus atropurpureus.</i>
Bladdernut	<i>Staphylea trifoliata.</i>
Carolina buckthorn	<i>Rhamnus caroliانا.</i>
Grape	<i>Vitis sp.</i>
Virginia creeper	<i>Parthenocissus quinquefolia.</i>
Cornel	<i>Cornus alternifolia.</i>
Rhododendron	<i>Rhododendron maximum.</i>
Laurel	<i>Kalmia latifolia.</i>
Deerberry	<i>Polycodium stamineum.</i>
Huckleberry	<i>Vaccinium vacillaus.</i>
Trumpet creeper	<i>Leconia radicans.</i>
Button bush	<i>Cephalanthus occidentalis.</i>
Elder	<i>Sambucus canadensis.</i>
Arrowwood	<i>Viburnum acerifoleum.</i>
Coral berry	<i>Symphoricarpos symphoricarpos.</i>



THE TIMBER SUPPLY.

Every person in the United States is using over six times as much wood as he would use if he were in Europe. The country as a whole consumes every year between three and four times more wood than all of the forests of the United States grow in the meantime. The average acre of forest lays up a store of only ten cubic feet annually. Whereas it ought to be laying up at least thirty cubic feet in order to furnish the products taken out of it. Since 1880 more than 700,000,000,000 feet of timber have been cut for lumber alone, including 80,000,000,000 feet of coniferous timber in excess of the total coniferous stumpage estimate of the census in 1880.

These are some of the remarkable statements made in circular 97 of the Forest Service, which deals with the timber supply of the United States and reviews the stumpage estimates made by all the important authorities.

At present but one-fifth of the total forest area of the United States is embraced in National Forests. The remaining four-fifths have already passed or are most likely to pass into private hands. The average age of the trees felled for lumber this year is not less than 150 years. In other words, if he is to secure a second crop of trees of the same size, the lumberman or private forest owner must wait, say, at least one hundred years for the second crop to grow. As a rule, such long-time investments as this waiting would involve do not commend themselves to business men who are accustomed to quick returns.

HEMP GROWING IN KENTUCKY.

By Thos. W. Scott, of Franklin County.

To successfully grow hemp the best bluegrass land is required. It grows best on land broken from blue grass sod, and well on good land after clover. The ground should be thoroughly prepared by good plowing and harrowing until a first-class seed bed is obtained. From three pecks to one bushel of clean seed per acre should be drilled and the ground rolled to get as smooth a surface as possible to cut over. I prefer sowing in April, as there is then enough moisture in the ground to bring all of the seed up at one time, which is important. The best time to cut hemp is when the blossom stalks have turned yellow, about the last of August or the first of September. There are machines for cutting hemp, but I have never seen one which cut it well as it can be cut with a knife by hand. The knife cuts closer to the ground, wastes less, and permits it to be spread more evenly upon the ground, resulting in better curing. When the stalks have thoroughly cured, it should be tied in bundles and stacked, the tops of the stacks well covered with loose hemp, which will effectually turn all rains. The first of November it should be taken down and spread evenly and smoothly upon the ground to rot. The length of this process depends upon the amount of wet weather, but ordinarily requires about two months. Hemp rotted in cold weather makes a brighter and smoother fiber than when rotted in warm weather. As soon as the stalks will break easily in the hands and drop loose from the fiber it should be raked into bundles and set up in shocks while dry, and the shocks tied near the top to prevent them from blowing down. It is now ready for the last work done to it upon the farm, which is breaking or separating the fiber from the stalk. Many machines have been invented for breaking hemp, but none of them have come into universal use, and the most of them have been relegated to scrap pile. The most of the hemp crop is still broken on the old hand brake, and will be until a more practical machine than has yet been invented is made. The fiber when cleaned is twisted into hand of two to four-pound weight and made into bales for market. The

greater part of the hemp crop was formerly made into bagging and bale rope for tying cotton, but none is so used now. Hemp is now used, in connection with other fibers, for making various kinds of commercial twines and twine for binding grain, and some into ship cordage and sail cloth. When machinery for cutting and breaking hemp has been perfected then it may become much more extensively and profitably raised than it can now be under existing labor conditions.

SEEDING TO WHEAT.

By Frank Blackford, Eldorado, Ohio.

The work incident to the securing of a proper seed bed depends upon the rotation in use. There are communities where the four-year rotation is almost universally followed—corn, oats, wheat and clover. Again, other communities have just as completely adopted the three-year rotation of corn, wheat, clover. We have followed the latter method for years and think it has more points in its favor than any other we can adopt, and one of the principal elements in its favor is the advantages which accrue in securing a proper seed-bed for wheat.

Where oats are used in a rotation it becomes necessary to plow the ground either for oats or for wheat; discing for both is not satisfactory. We have found that in the few times we have sown oats, and these have been occasioned by corn not ripening up in time or blowing over too badly to seed to, wheat, that we have grown better oats by discing the ground and have had a better stand of grass than those of our neighbors who broke the ground. The fact that we have grown better oats by disking than others by plowing is due to two things primarily, getting the oats sown from one to two weeks earlier and, second, we have the ground compacted that it will conserve the moisture much better. Having disced the ground in the spring, it is almost impossible to secure a seed-bed for wheat save by plowing the ground and by working repeatedly to get it down compactly that the wheat will not freeze out during the winter. The task of fall plowing and working in a great majority of cases is an arduous one—a horse and man killer, and we are sure that when we consider the use of oats in a rotation which means the use of the ground a year for an oat crop and what we secure for this crop in the market, coupled with the work necessitated by this rotation, we have paid very dearly for the oats we grew.

For these and other reasons in connection with the maintaining the fertility of our fields, we have discarded oats in cases of emergency and will consider seeding our corn fields in wheat. Taking

a term of years, the only wheat that has outyielded corn ground for wheat has been tobacco or potato ground or a clover sod broken up and summer fallowed. And the reason for this is that the cultivation given our corn is ideally adapted to the production of a compacted seed-bed, possessing the ability of holding enough moisture to give the wheat a splendid start in the fall, also to hold the wheat during the period of heaving incident to March and early April, also to liberate certain fertilizing elements unused by the corn crop, which gives the wheat a strong and vigorous start.

We have in these days a great number of farmers claiming that corn fodder is a very expensive feed, some with much reason. Those who make it expensive will find it so. Those who use judgment in the cutting and handling will find that it is the cheapest forage that can be made for winter use, save probably ensilage. We have found it profitable almost every year, always paying for the expense of making it. We have also found that the cultivation of our corn during the summer by running through it with a 14-tooth drag, i. e., an ordinary 14-tooth harrow with the teeth cut in two so as not to project very high above the frame of the harrow and set not more than two inches below the frame, so that it scratches and also drags, is about the best cultivation we can give our corn, and this cultivation made for the corn is splendidly calculated to secure a seed-bed for wheat. If we have cultivated the corn as it should be, there is then no need of doing aught else save going in with the drill and sowing. The element of cutting off the corn is to be charged to the fodder and not to the wheat; the cost of cultivation is also to be charged to the corn, and we have absolutely nothing which should be placed against the wheat save the drilling, the seed and fertilizer. I maintain that when we consider the inexpensive method of sowing and the splendid chance we have for wheat when the work is done properly and in season, it is the business way of putting out the crop. There are times when conditions are such as to preclude this cultivation so necessary to the corn, and also so necessary for our seed-bed. If it can't be done in the corn, it must be done after the corn is taken off. The ground must be made ready to receive the grain if we are to hope for a maximum yield. In the season of 1905 our corn went down early, and, owing to a month of wet, cold weather in April and May, almost all the corn was planted over and in consequence was very late, too late to cut off before October 1, which many of us consider

too late to sow wheat. We were then compelled to turn the corn, give the ground the cultivation we could, of necessity quite slight, and to sow the wheat, giving it a lick and a promise and trusting the season to supply the lack of attention given in seeding. Our trust was not misplaced, for, notwithstanding our ragged work in seeding, we had an average yield of 26 bushels per acre.

In our locality we are troubled with a few biennial weeds which come up in the fall and make considerable growth, and fructify the following season. Among those which trouble us are docks, plantain, and especially the white tops. These we are convinced must be removed, for we can't grow a crop of weeds and a crop of wheat at the same time. We have always found that weeds of this class germinate early in fall or late in summer, and if we have eradicated the plants appearing at or before the time of sowing we are almost sure to have none of them to contend against in our wheat. The cultivation we give the corn with the little harrow above alluded to destroys these weeds just as they germinate, and hence these give us no trouble when we are able to do this work at the proper time.

There seems to be a notion in the minds of some that so much work must be done on our wheat ground irrespective of the conditions obtaining when beginning. I have seen corn ground perfectly level, free from the class of weeds alluded to, and splendidly compacted, torn up with a spring tooth or a disk harrow. The seed-bed, so near perfect before, destroyed, and all the work which can subsequently be done will not correct the blunder of tearing that ground up. The trouble with too many of us farmers is that we do not inquire into the reasons of things enough. We do not know why things should be so and are unwilling to find out the whys and wherefores. Too many of us do things because others do them, irrespective of whether there is any scientific sanction for the operation, and I have ocular demonstration that a great number of the practices of any neighborhood are absolutely useless and often time positively deleterious. The lazy man in an abomination, but of all the foolish people in my knowledge the superlative degree of folly is found in the man or woman who works like a "nigger" because he cares to make an appearance and doesn't want to carry the epithet of being indolent. But that man who has my profoundest esteem is he who always has a reason for the faith which is within him and who never does a thing which he has not satisfied himself

was the best he could have done under the circumstances. The question of labor must always be considered in growing a crop and ever becoming more serious, and it is time for the American farmer to know what to do, and how to do it; what the fundamental operations are calculated to do, and I opine they will be better done and also much more cheerfully. Having these things in mind, there will be a better cultivation given our corn, there will be more moisture conserved, fewer weeds with which to contend, and a crop put out economically and well. There is a question which is quite a mooted one as to the depth to place the wheat and the kind of implement to use in sowing. I have found it best to sow a little deeper earlier in the season. When the season is late then wheat should just be covered so that it will germinate quickly and grow at once, sending out as complete a root system as possible. Earlier there is time for a slower early growth—there is danger from insects, the fly in particular, and if sown tolerably deep will oftentime sprout out below the point attacked by the fly and the wheat will sometimes go into winter quarters as strong and vigorous as though never infested.

I am convinced that where a hoe drill can be used at all it is a superior implement to a disk drill. I like to have a perfect ridge between each drill row, and this will feed down upon the growing plant gradually, a little with each shower, and the wheat will have made a stronger growth and will in my judgment have a firmer rooting. This has never been actually demonstrated to me. It is only a theory, but it looks reasonable. I am sure the most of us, having a hoe drill and believing in it, will have the ground in a condition where it can be used and not so hard and foul as to necessitate the use of a disk drill.

Though the world's acreage for this cereal is almost unlimited and in some locations can be grown more cheaply than on the high-priced fields of Ohio, it can be grown profitably in our rotations and, we believe, in ever increasing yields.

"ALFALFA ON HILL LANDS."

(Address delivered by W. T. Kane before the Morgan County, Ky., Farmers' Institute.)

In a discussion of alfalfa as a forage plant of value to all farmers, be they located in a hill country or on a more level plateau, the lines followed should be the same. Its value is now conceded by all well-informed farmers throughout the great farming belt from the Rocky Mountains east to the Atlantic coast.

Thousands of farmers have made efforts to grow alfalfa and have failed, bringing discredit not only on the plant, but also on other farmers who have succeeded in growing it and are enthusiastic in its praise. The conditions surrounding these failures I find invariably to be the same, extending all over Eastern Kentucky from the Ohio river to the Cumberland mountains. I find failure always the case where there is not a definite knowledge of its nature and habit of growth possessed by the farmer.

This then brings us to consider in a logical way its true nature in all its varied phases. In doing this, we must turn our attention to its roots. Examine them, and by comparison of its root system with its top habit we are enabled to more intelligently arrive at what its nature demands from its infancy to fully developed plants and they converted into hay.

Come with me, if you please, to a plat of two or three-year-old alfalfa on sandy loam, with clay subsoil or totally clay soil reasonably fertile, and we will go after its roots with a mattock and shovel to a depth of five feet, and the end of the root is not yet reached. As we carefully remove the surface soil we find on the small fibrous roots minute formations called nodules, which is the habitation of a certain family of bacterial organisms. Through these the plant in some manner is enabled by nature to extract the free nitrogen from the air and deposit it in the soil in the same manner as does the whole list of leguminous plants. In this connection it is well to say that the bacteria native to the alfalfa inhabits or operates the life principle of no other legume except the sweet clover (*Mellilotus*). From this fact we conclude that where sweet clover grows thriftily, alfalfa will grow with no other inoculation of the soil than that carried by nature in the soil. We now turn to the main, or tap root, that penetrates the ground far below the frost line of winter and is silently but surely carrying on

in its workshop of nature—at a normal average temperature—the great object and purpose of its life. Here at a depth of from five to eight feet and deeper these roots are as active in January as in June, dissolving the mineral fertility in the earth which surrounds them, storing it up in their body to be brought to the surface and made available in the growth and construction of its top system during the summer months from which the farmer realizes four or more tons of hay per acre each year.

That such a system of vegetable growth may live and thrive to a fair completion of its life object it must have the ideal resting place for its seed, so the infant plant will receive its nourishment through its delicate and rapidly growing rootlets and enter on its life journey with vigor and health.

The first requisite in this direction is a proper selection of a dry and fertile soil made fine by repeated cultivation with harrow and drag, fineing and packing the soil so that, when by June 1st the land has been so cultivated that all foreign weeds and grass have been killed, fifteen pounds of seed may be sown to the acre and brushed in or lightly covered in a real dust mulch if possible.

The seed germinates quickly and the young plants grow more rapidly than any other legume excepting crimson clover, and for this reason calls for the top to be removed often as it can be caught with the mower, that the roots may be strengthened and driven well down into the soil.

Here I wish to say that it is my opinion that nine-tenths of the failures with alfalfa are traceable to poor and incomplete preparation of the seed bed and the other tenth to failure to clip the plants as often as required during the first summer's growth.

We now have the alfalfa well into the second year of its life, when it is ready for the mower to convert into hay. That old mower that has been in the field rusting since last harvest must be looked after, oiled up and put in trim for the coming season. By the 25th of May little blue blooms will begin to appear. Right then start the mower, rain or shine. It must be cut; it won't wait on you without injury to itself. After these few blooms appear it won't wait on you to attend court or visit your mother-in-law for a week. It must be cut, and why? Because it is not indigenous or native, and to ripen its seed or even make efforts in that direction is injurious to it. It at once sheds its leaves and sickens. In this respect it is like the cow

pea in some of its features, which would not ripen its seed when first introduced from its native land.

From my own personal experience I believe that any reasonably fertile land, clay, sand, sandy loam or limestone, not wholly exhausted by cultivation and remaining bare of vegetation or void of humus, has sufficient bacterial inoculation by nature to insure a reasonable catch of alfalfa, when all other requirements of the plant have been strictly complied with. Should the farmer have any doubts of this native inoculation, a small importation of soil from a near or distant plantation of alfalfa, scattered over his ground prior to sowing the seed, will insure the necessary inoculation. My observation during six weeks' work in Eastern Kentucky at Farmers' Institutes bears me out in my opinion that the greater part of our fertile soils carry alfalfa's favorite bacteria. During these six weeks I was frequently requested to visit fields where alfalfa had been sown and failed to grow. Some was sown on wet soggy bottoms, some seemed favorably located, but the weeds had been permitted to choke it out. Others were in a fair condition, carrying the nodules on the roots in abundance, but the preparation of the soil was so miserable that it might be regarded as a failure. One farmer had some millet, and alfalfa was much in evidence in his millet at cutting time. This shows some seedsman got the adulteration somewhat to his own disadvantage and that it assures this farmer that he can raise alfalfa or it would not have grown among the millet.

Summary: Thorough preparation of the soil, by any method that will pack the soil as deep as it has been broken and a fineing of the surface to a real dust mulch.

Clipping must not be neglected the first summer as often as it can be caught with the mower.

Second year and after it must be cut for hay when first bloom is showing on the crop, and must not be deferred on the first, second, third or fourth cutting. Must not be graded after frost. Drainage must be so perfect, either by natural location or by the underground drain, that no water is permitted to stand for even a short time on the surface.

A perfect catch of alfalfa will place six plants to the square foot, which will place two hundred and fifty thousand plants on an acre. These, with their long roots penetrating far below the surface, must not be overlooked as to the question of moisture in a sufficiency or as to an over supply.

THE USE OF LIME IN THE SOIL.

This Article Should be Read by Every Farmer in Kentucky.

By Joseph E. Wing, Mechanicsburg, Ohio.

For a long time men have known something of the value of lime in the soil. They have observed that soil made from decaying limestone rocks were more fertile than soils made from sandstones or slates. They have even experimented with liming their lands and have generally observed a benefit from that practice. And yet the matter has not until recently been well understood. Within a very few years the matter has been investigated and much learned that was not hitherto known of the action of carbonate of lime in the soil. Now we have a very much broader base upon which to build than we once had. We know why limestone soils are rich, and why they remain rich. We know why it so difficult to maintain soils deficient in carbonate of lime.

What is carbonate of lime? It is the common, unburned limestone. Burning it drives off the carbon and gives us caustic lime or "quicklime." Caustic lime has long been in use as a fertilizer. It sweetens acid soils. It also attacks vegetable matter and all organic substances. After being exposed long enough to the air caustic lime loses its caustic property and by absorbing carbon becomes again carbonate of lime. Liming with burned lime is an old practice, but it has been often condemned. It has been said of it that "liming soils enriches the father and impoverishes the son." That is, it has often given an increase of crop, followed by a greater impoverishment of the soil. That was especially noted where no humus or vegetable matter was worked into the land.

Let us first consider what carbonate of lime does in the soil. Soils are either alkaline, neutral or acid in their character. It is curious to observe that all the great civilizations in the world have been built upon alkaline soils. The lands of Egypt are alkaline. The lands of the Euphrates regions, where stood Babylon are alkaline. So of the lands of Persia. The lands where stood the

only great civilizations in America were alkaline, in Arizona, Utah, Colorado, Mexico and southward. There are other old and enduring civilizations upon soils that are alkaline or at least neutral, the civilizations of England, France, Germany. They are all based upon limestone. And farmers over there have for very many centuries used lime, often a soft, chalky limestone, unburned, to renew their fields and maintain their fertility. One finds upon the fertile farms of England great pits whence lime has been dug for ages to keep the soils sweet. Incidentally, when these soils were kept sweet clovers grew well upon them and with the use of manures the fertility has increased for centuries.

There is something wonderfully cheering about a limestone country. There the earth seems always new, always young. There the grass creeps over every idle inch of soil, there tree and shrub and flower riot, there the men are strong and the women beautiful and the children many and happy. The very birds are happier on the limestone.

One of the curious sights in old England is the marked line of demarcation between the limestone and the non-limestone soils. It is often as marked as it can well be, it is often a waste, a heath, unenclosed outside of the limestone limit. And when men take in this waste, this heath, the first thing they do is to lime the soil and make it sweet. Until that time only wild things will grow, after that, with the aid of manures, all useful plants may be taught to grow.

But we may find as useful illustrations in our own land, we may find them in Kentucky or any other southern State. One finds on the limestone rich fields covered with blue grass. He finds off of the limestone many poor fields, covered with poorer trees, poorer grasses, poorer men, poorer farm animals. He finds youth and renewal on the limestone, he finds discouragement and decay off of it. And even good farming sometimes can't make win off of the limestone. Lands won't retain fertility when they are deficient in lime. The writer has been mystified and dismayed to find on clays deficient in lime almost no enrichment left where only a few years before he knew there had been used large amounts of stable manures. On limestone clays manure is almost everlasting.

In the state of Illinois is a marked illustration of the use of lime in the soil. There is a line running about east and west, that divides the State sharply into two sections. North of this line the soil is

very rich and has always been rich. It sells there now for \$150.00 per acre. South of this line the soil is very poor and has always been poor. For a million years, more or less, the prairie grasses have grown on all this land, have died, decayed, bequeathed their richness to the soil. On one side the richness has remained, on the other side it has gone. Why is this? On the one side there is lime, carbonate of lime, in the soil, on the other side there is a lack of lime. That is all there is that makes the difference, but what tremendous difference it has made! Lime diminishes waste of nitrogen. We do not know exactly how, but we know that where there is a soil well stored with lime it tends to get rich when nature takes it in hand. Let us consider this matter.

Lime in the soil neutralizes soil acids. What are soil acids? We do not know very well what all of them are, but we do know that the decay of any sort of vegetable matter in the soil may leave an acid there, just as the decay of an apple will make vinegar. Soil acids are very injurious to useful plants. In soils filled with acid clovers and most other leguminous crops can not grow. Legumes build soils. So when they are absent and acids make it impossible for them to get back impoverishment of that soil begins

Lime also feeds plants, slightly, yet it is true that nearly all soils have in them as much lime as the plants need to directly take up. Lime is not of itself, then, a fertilizer. But it sweetens the land so that soil enrichment by use of clovers can take place, and it holds in the soil the nitrogen that gathers there. Added to this is the fact that many limestones, especially in Kentucky and Tennessee have in them phosphorus. Phosphorus is a fertilizer, a soil and plant food of the highest order. So if one can return to his soil limestone rich in phosphorus it is the more valuable. There is great variety of limestones in Kentucky. One should seek to use the best.

On Woodland Farm it was learned long ago that alfalfa and clovers grew well. The soil of Woodland Farm is clay, and rather tough, poor clay too, but it is well filled with pebbles of magnesian limestone, placed there by grinding of glaciers many centuries ago. These limestone pebbles keep the soil sweet enough so that clovers and alfalfa may grow. The lime makes it possible by the aid of manures to build a remarkable degree of fertility. I have often noted, and wondered, that other farms in other regions, thoroughly

manured, seemingly richer than ours, yet refused to grow good alfalfa. These other soils had not in them the deposit of limestone pebbles. That made the difference between success and failure in alfalfa growing. Now other men are buying lime, unburned, and ground, and using it on their farms, and they too are getting alfalfa as good as we grow on Woodland Farm, and in some cases even better.

In Kentucky many a man has observed that where a stone crusher has been set up and rock crushed for the roads the limestone dust blowing over his grass has a marked effect upon it, in some cases doubling the growth, and later he has seen a sudden and marked increase in the number of clovers appearing spontaneously in that field. They came in because the land grew sweet, and encouraged them. There is indeed a great lesson in this simple object lesson, that may be seen in nearly every neighborhood. Another good object lesson is the extraordinary thrift of the grass along the roadsides where the limestone dust from the turnpike has blown off from the road.

But is it true that liming soils based upon limestone rock will be a benefit? Not in all cases, but upon probably 80 per cent. of the soils of Kentucky. Where the underlying rock is hard and unbroken and the clay rests upon it one must remember that for centuries there has been a steady leaching through that clay, and the lime has largely been leached through and away. Thus there may be a real and great need of lime right above hard limestone rock. On the other hand, where the limestone is much broken up into small fragments and these are mixed through the soils as one finds sometimes in hilly regions that soil is probably as sweet as it can be. Witness the extraordinarily beautiful fields of alfalfa seen sometimes on steep and stony Kentucky hillsides. The very presence of these stones, fragments of limestone as they are, is the cause of the good alfalfa growing upon them.

Then there are the millions of acres of soils not based upon limestone in Kentucky, all of these soils are crying for lime, and to build them profitably without first liming them is not practicable. With lime they may be built to great fertility, provided the owner adds to the lime the other necessary good practices. Without lime good farming is powerless to greatly benefit these sandstone and shale and slate formed soils.

What is the indication that soils need lime? That the fertility has

dropped low. That clovers grow scantily, that alfalfa is weak and profitless, that the little dock or sorrel appears upon the field, with other worthless weeds and grasses.

What is the easiest and quickest cure for acidity? The use of burned lime, water slacked, scattered evenly and worked into the soil. As little as 1,000 pounds to the acre of this caustic lime may do wonders, so far as correcting acidity goes. But there is the better use, the safer use, of unburned ground limestone. Too much burned lime kills soils for a long time. Too much ground limestone, or carbonate of lime, has no injurious result whatever. It simply remains in the soil inert until it is needed, be that a year or a century. It is like putting coal in a bin or money in a bank, you have it there, doing no harm, until it is needed.

Then the use of ground limestones is cheap. Everywhere in Kentucky, where there is limestone, there are crushers making road ballast. All that is needed now is the addition to the plant of mills to grind the crushed stone. It need seldom be transported on cars. It can nearly always be ground where farmers can haul it direct to their fields, and in thousands of instances can be ground on the farm where it is needed.

How much ground carbonate of lime is needed to make soils sweet and good? An acre has in it 160 square rods. A square rod is a large bit of land. No one would think of using less than 100 pounds of lime dust to mix with a rod of soil, going a foot deep, and that is a safe amount to use. That would require 8 tons to the acre. Soil experts are advising about 6 tons. Much more is unnecessary, much less is insufficient. The more is used the longer it will endure. How much will that cost? It is probable that the limestone can be ground for about 75 cents per ton. In Ohio it is sold and loaded on cars for \$1.00 per ton. Say that it costs the same in Kentucky, then there would be an outlay of, say, \$10.00 per acre to make the land safe and sweet. Is that too much to spend for such a purpose? If it makes clover and alfalfa come back again it will add much wealth to the farm, it may double the value of every acre thus treated. And it is a permanent investment, so it is not used too stingily.

How finely should it be ground? The finer, the sooner available. The coarser, the more enduring. If as fine as shelled corn or wheat it will do, though more must be used to the acre. If as fine as rather coarse cornmeal it will serve excellently. It may be ground as fine

as flour, but it is hardly necessary to do this. Once the land is sweet the coarser limestone pebbles will keep it sweet. It is better, though, if the machinery is at hand, to grind as fine at least as grains of wheat. And the coarser it is ground the more should be applied.

How to distribute it? A manure spreader may be made to do the work. Or it may be scattered with a shovel.

There are also lime distributors made for the purpose.

What is the next step after lime? Drainage, if nature has not done that for you. Then humus. Any sort of vegetable matter in the soil. Stable manure, straw, cow pea vines. Then phosphorus. Then clovers, alfalfa, corn, tobacco, grains, what you like. And always youth and health in that soil, once you secure its proper lime content, and afterward feed it as it deserves.

It is the hope and belief of the writer that within five years there will be a thousand mills busily grinding Kentucky limestones, and ten thousand farmers using it upon their soils. When they have done this they will have laid the foundation for real and permanent soil improvement. And the man on the sandstone or the slate formation, he above all others should seize the first opportunity to get lime into his soil. Then his manures will stick. Then his clovers will grow. Then Nature will work for him and not against him. Then can he look confidently forward to making his farm fully equal to the best in the Blue-grass region, for the rest is only a detail of adding phosphorus, humus, potash if it is needed, growing legumes, feeding animals and returning the manures.

JOSEPH E. WING.

ECONOMICAL FEEDING OF ANIMALS.

By Dr. H. P. Miller, Sunbury, Ohio.

The economical feeding of animals involves the consideration of several factors: the animal, the conditions under which it is fed, the purpose for which it is fed, and the feed. The first two factors can only here be mentioned. The third depends upon the fact that the tissues and other animal products desired from the feeding of animals call for different substances, called nutritive elements. A nutritive element is a substance which furnishes, upon being consumed by an animal, the material for the production of one or more of the things desired, as muscular tissue, fatty tissue, milk, or some other animal product. The explanation of why our fathers and many of us have fed animals with some degree of profit without understanding how foods were utilized in the body, or anything regarding the selection of suitable feeds, depends upon the fact that all of the feeding stuffs ever utilized contain some of all of the nutritive elements required. The necessity for a more careful study of the feeding problem depends upon the fact that very few of the feeding stuffs contain the nutritive elements in the right relative amounts for best results; and also upon the fact that animals fed for different purposes require different amounts and different proportions of these nutritive elements.

Now to explain what is meant by a nutritive element, call to mind that you have sometime taken a small handful of wheat, placing it in the mouth to chew. After the wheat grains are ground and mixed with saliva, the quantity diminishes and the consistency changes. What has actually taken place is that the starch grains of the wheat have been dissolved by the saliva and swallowed with it. The somewhat pasty, tenacious mass that remains in the mouth and does not dissolve or disappear, no matter how long it is mixed with the saliva, is the gluten of the wheat grain, being a different chemical substance and producing different elements in the animal body when eaten. Now, to understand the use of these nutritive elements still farther, I will cite that the chemist makes a further separation of the starch, which is representative of the class of nu-

tritive elements called carbohydrates, into its chemical elements, finding that it contains carbon, hydrogen and oxygen; hence the name, carbohydrates.

There are other substances, similar in chemical composition, grouped with this in the class called carbohydrates. The principal ones are sugar and gum. Vegetable oil, called fat, also contains the same chemical elements, but in different proportions. Having more carbon, it is more valuable pound for pound, hence is usually given as a separate element in the analysis of feeding stuffs, but when eaten by animals it serves the same purposes as the carbohydrates, hence is classed with them.

This group of nutritive elements when eaten by animals serves one or more of three purposes. The first demand is to supply the heat of the animal body. For this carbon is burned after being digested and assimilated and coming into contact with the oxygen in the lungs in a very similar way to which carbon is burned in any of the fuels we use for heating our homes. This demand upon the food is variable, just as the demand for fuel for heating a stove is variable, depending upon the conditions under which either the animal or the stove is placed. And here is the value of this rather technical discussion of the uses of food. An animal exposed to low degrees of temperature and high winds uses a much larger proportion of its food to keep its body warm than an animal that is comfortably housed. This explains why, taking two animals equally well bred, in equal degrees of health, of equal age, differing only in condition, and placing them in an open yard in the winter and feeding them exactly the same kinds and amounts of food, the poor animal will become poorer and the fat animal become fatter.

The second use to which this carbonaceous food, or carbohydrates, is put is in the production of working energy or power. Thus we see why it is that a working horse requires more food than an idle one.

The third way in which this class of nutrients is utilized is in the production of fatty tissue, fat not being produced until the other two demands are met. We understand why it is more difficult to fatten an animal in winter than in summer, and why it is all but impossible to fatten a hard working animal. Note that this explains the production of fatty tissue only. The explanation is that the carbohydrates do not contain all of the chemical elements

necessary for the production of muscular tissue and other similar tissues, as the nervous and connective tissue, the integument and its covering, as wool, hair, feathers, etc. For the production of these tissues the animal requires the nutritive element termed protein, a type of which is the gluten separated from the wheat in a similar manner to that mentioned in the illustration. Similar products are found in practically all of the feeding stuffs ever employed.

The next question the feeder asks is how we are to find these different nutritive elements. The farmer is not supposed to make the analysis for himself. That has been done and the results published in bulletins that are in reach of every one. The various experiment stations, and the Department of Agriculture at Washington have issued bulletins that can be had for the asking, giving the nutritive elements in practically all of the feeding stuffs ever employed.

The next question the feeder asks is, in what proportion do our animals want these different nutritive elements? For the answer to this we must not turn to the chemist elements? For the answer to recorded results gotten by asking the animals. To illustrate: A one thousand pound steer was placed in a comfortable stable, his food and his water being carried to him so that he was not expending any large amount of energy, or using any large amount of food in producing heat. Known amounts of the different nutritive elements were fed him until it was found out just how much of each it required to maintain him at one thousand pounds weight for twenty-four hours time. That is, the maintenance ration was found, the result being that he required about seven-tenths of a pound of protein and ten times that amount of carbohydrates and fats. The question was next put to a cow of the same weight giving twenty-five pounds of milk every twenty-four hours of time. The result, as would readily be guessed, was that the cow required more food, the food being required for the production of milk, but a similar increase in feeds of the same kind was not satisfactory. The cow wanted a greater increase in the protein, the result being that she wanted about three times as much protein material but not ten times that amount of the fat producing material, only six times as much; so that, as it is expressed, the cow wanted a nutritive ratio of 1:6.

140 *Seventeenth Biennial Report Bureau of Agriculture.*

Now the question that presents itself is,—Where are we to get feeds with these nutritive ratios, or how may we combine feeds so as to produce them.

	Digestible Nutrients Pounds per ton			Nutritive Ratio.
	Protein.	Carbo- hydrates.	Fat	
Corn Silage	18	226	14	1:14.4
Timothy Hay	56	868	28	1:16.7
Clover Hay	36	716	34	1: 5.9
Alfalfa Hay	220	792	24	1: 3.9
Corn Grain	158	1334	86	1: 9.7
Oats, Grain	184	946	84	1: 6.2
Wheat Bran	244	784	59	1: 3.8
Gluten Meal	516	866	220	1: 2.7
Cottonseed Meal	744	338	244	1: 1.2
Linseed Oil Meal O. P.....	586	654	140	1: 1.7
Soy Beans	592	446	288	1: 1.9

Referring to the chart, we see that corn silage (which means the entire corn plant) has a nutritive ratio of 1:14. By this we mean that there is fourteen times as much material in the entire corn plant which goes to produce heat, energy and fat as there is of the material used to produce muscle or the allied tissues, or milk in feeding the cow. Now recall that the cow wanted a nutritive ratio of 1:6. Hence it is seen that in feeding the entire corn plant we feed a great excess of the carbohydrates or fat producing material. Now in order to enable the cow to utilize all of the fat producing material in the corn plant we must feed something that contains a relatively large amount of the protein material in order to get the right proportion of the two nutritive elements. Glancing at timothy hay, which seems to be the most nearly universal feed in Kentucky, we notice that it has a still wider nutritive ratio, 1:16. Hence this calls for a larger supplement of the rich protein feed. Glance at the nutrients in clover hay. Here we see that the striking contrast between the two hays lies in the relatively large amount of protein material, giving a nutritive ratio of approximately 1:6, just what it was found the cow needed for milk production. You may ask the question, Then why not feed clover hay alone? The answer is to be found in noting that the combined nutrients in clover hay are

less than one thousand pounds; that is, more than one-half of the clover hay is material from which the animal gets no value. In a word, the cow cannot eat enough clover hay to get digestible material enough to enable her to produce her full possibilities in milk.

Note that alfalfa has a still larger amount of protein, giving it a much narrower nutritive ratio; narrower, in fact, than the cow wants. So that it may be fed as a supplementary feed with corn silage or timothy hay. However, it is still open to the objection of having a considerable proportion of indigestible fiber, so the search for supplementary feed for timothy hay cannot rest here. It means that some concentrate, as a whole grain or a grain product, must be used. First examine corn. We note that on adding all of the digestible nutrients, it contains more than any other feeding stuff mentioned, but has a nutritive ratio of 1:10, which is again too wide for the cow. Oats it will be noted contain more protein and less of the carbohydrates and fat, giving it a nutritive ratio of 1:6, just what the cow said she wanted. Here it may be noted that all young growing animals need just about the same feed as the cow producing milk, and in these two facts we have the explanation of why oats is a better grain for the colts, calves and lambs than corn. It is not that they contain anything the corn does not, or that corn contains anything that oats does not, but that the proportion of the nutrients is right in the oats for the cow and the young growing animals. It will be noted that clover hay and oats, both being rich in protein, may be combined so as to make the perfect ration for the cow. The only reason the discussion does not rest here is that we have not provided any substitute for either silage or timothy hay for cow feeding, hence the search must go farther. Wheat bran, which corresponds somewhat closely to your mixed feeds, contains a still larger amount of protein and a smaller amount of the carbohydrates, giving it a nutritive ratio of about 1:4. This explains why you get good results in feeding this with either corn or timothy hay. Another question here arises.—Is this the cheapest source of protein? Note there are several other feeds containing much larger amounts of protein, as gluten feed, cottonseed and linseed meals. The question then arises, Are these other feeds of greater value in proportion to their greater content of protein? In other words, is gluten feed, containing approximately twice as much protein as the wheat feed worth twice as much? Prof. Henry, an

acknowledged authority upon feeding questions, says that so far as known at the present time one source of protein is as valuable as another. In my own feeding operations I have acted upon this statement and years ago discontinued the feeding of wheat bran when the price went to \$16 a ton. I have since bought the feed that furnished me protein at the least cost per pound, with apparent good results. This consideration, however, is to be noted, that cottonseed meal is not so valuable to feed with timothy hay as with corn silage, owing to its dietetic effect; of linseed meal the reverse is true. Hence linseed meal is better than cottonseed to feed with timothy, cottonseed better to feed with silage. Another factor enters here also. Some animals do not like one meal as well as another and the careful feeder will consider the likes of his animals. But as to the question of cost, note that your wheat feeds, containing 240 pounds of protein per ton when costing you \$24 per ton make each pound of protein cost ten cents. Cottonseed meal at \$35 per ton makes it cost less than five cents per pound. Now that you may understand how to determine the relative values of any feeds bear in mind that your State laws require the labelling of every sack of feed sold in the State with a statement of the per cent of protein and the per cent of fat. For your purpose you need consider for the present only the per cent of protein. This means the number of pounds of protein in each hundred, and cottonseed meal containing 42 per cent of protein contains 42 pounds of protein in each hundred pounds. So with other feeds. Now to find what each pound of protein costs, divide the price per ton by the number of pounds of protein in each ton. That will give the cost for each pound of protein.

Here another fact must be noted. I have already called attention to the fact that the hays contain a relatively large amount of crude fiber, which is indigestible, hence worthless as food material. In any commercial feeding stuff having a small per cent of protein and fat, there is necessarily a relatively large amount of crude fiber or worthless material; hence a cottonseed meal containing 21 per cent of protein is not worth half as much as one containing 42 per cent, as might appear upon the face, the reason being that the 21 per cent meal has a very high per cent of crude fiber that must be passed through the alimentary tract and calls for a considerable expenditure of energy in thus handling it. So that the reserve

gotten from the low grade goods is correspondingly small. Here the general statement might be made, as has appeared by investigations we have made at various points in the State, that high grade goods always furnish the nutrients at less cost than low grade goods.

As to the specific directions for feeding cows, this is to be said: No two cows require exactly the same amounts of feed. The amounts should vary with the amount of milk the cow is giving, and for each individual cow should be determined by the amount for which she will pay. That is, each cow should be fed up to the limit for which she will give an increased flow of milk. I avoid saying that just so many quarts of oats or wheat feed or cotton-seed meal should be given, because not all dairymen will have any single feed that might be mentioned, and as we have tried to show, it is not necessary that any particular kind of feed be used; the important thing being that sufficient, and the right proportions, of the nutritive elements be supplied, each feeder providing them in the form that is most convenient and economical.

The entire discussion thus far has been in search of a feed rich in protein to supplement feeds rich in carbohydrates. There is a single instance in our feeding operations where the reverse must be done. That is in the feeding of skimmed milk to pigs or calves. The fat has been removed and the nutritive elements that remain are very largely proteids, giving skimmed milk a very narrow nutritive ratio. Hence the proper supplementary feed for it is one rich in carbohydrates and fat. This we find in corn; hence the practice upon my own farm of feeding shelled corn to pigs and calves in connection with skimmed milk. Prof. Henry found best results were obtained by feeding one pound of corn with not to exceed five pounds of milk, for young pigs. With calves eating some hay the proportion of milk may be slightly greater than this. We have not found it any advantage to grind the corn for either pigs or calves. They digest it completely. There is a real advantage in feeding it dry and in condition in which it must be thoroughly masticated, in that the saliva thus secreted is necessary for complete digestion of the starch. It is really a very great waste of the most valuable and costly nutrient to feed skimmed milk alone, and many instances of its proving detrimental to pigs are on record.

Because of the increasing cost of protein in all commercial feed-

ing stuffs I am attempting to produce the needed protein through the soy bean, which, it will be noted, contains practically the same amount of protein as linseed meal, giving an extremely narrow nutritive ratio. The crop promises to be a profitable one so long as these commercial feeds remain as high as they are. The only obstacle to their becoming a regular crop upon every farm needing additional protein to feed supplementary to corn and timothy hay is the difficulty in harvesting them. It is to be noted that the man who relies upon timothy as a hay or fodder crop may greatly improve it by cutting early, early cut timothy having fully 50 per cent more protein per ton than late cut timothy. The same is true of mixed hays, even clover, ripe clover losing much of its leaves which contain a large proportion of digestible protein.



Orange King is a Massive Red. Orange Blossom Bull weighing 2500 lbs. He won 1st in class at Iowa State Fair and 2nd at Ohio and Indiana State Fairs and at International Live Stock Exposition 1906, and 1st in Class and Sweepstakes for bull any age, Kentucky State Fair 1907. Owned by W. R. Moorman & Son, Glendean, Ky.

POINTS CONCERNING THE CONCENTRATED COMMERCIAL FEEDING STUFFS.

Law of Kentucky and its Enforcement.

1. The law was passed by the last Legislature and went into effect June 11, 1906.

2. It requires every bag, barrel or other package of concentrated commercial feeding stuff sold, offered or exposed for sale in, or imported into this State, to have attached an official tag issued by the Kentucky Agricultural Experiment Station, Lexington, Kentucky.

3. That the official tag must have printed thereon the name of the feed, the name and address of the manufacturer or dealer, the weight of the package, the percentage of protein and fat, and the names of the ingredients from which the feed is made.

4. That the data given on the tag are the guarantee given by the manufacturer or dealer.

5. That if the feed is not as represented on the tag, the party whose name appears on the tag is held responsible under law.

6. That no purchaser should accept any feed without it being properly tagged with an official tag, giving the manufacturer's or dealer's guarantee, etc.

7. That three distinct kinds of tags are issued to represent the different classes of feed. First, a manila tag printed in black ink represents a straight feed, such as made from wheat products only, or corn products only, etc. Second, a manila tag printed in red ink represents a mixed feed—that is, a feed made from the products of two or more different grains, such as corn and wheat, or corn, wheat and oats, etc. Third, a yellow tag indicates that the concentrated feed stuff is mixed with a substance of little feed value, or with one

not classed as a concentrated feeding stuff, as cotton seed hulls, oat hulls, chaff, peanut hulls, corn-cob meal, etc.

8. That the purpose of the law is to protect the consumer and dealer.

9. That inspectors are sent out by the Station to inspect feeds and to take samples and send them to the Station for analysis to see that they are up to guarantee.

10. That any purchaser buying feed for his own use and having good reason to suspect that it is inferior in quality, may and is requested to submit fair samples to the Station for free analysis. Such samples should be taken according to Section 7 of the law.

11. That all manufacturers and dealers who do not comply with the provisions of the law are held liable and upon conviction in court will be fined.

12. That the Station stands ready through correspondence, through its laboratories and through its inspectors, to furnish whatever information it can concerning the character and nutritive value of all feeds.

13. That in executing the law, the Station wishes to assist, as far as possible, alike, the manufacturerers, dealers and consumers, and asks the co-operation of all, in order that the provisions of the law may be more efficiently carried out and satisfactory results obtained.

**CIRCULAR REGARDING THE CONCENTRATED
COMMERCIAL FEED STUFFS LAW.**

The trade in Kentucky of concentrated feed stuffs, such as bran, shorts, shipstuff, inferior grades of flour, corn meal, cotton seed meal, gluten feed, dried distillery slops and various mixtures of ground grains, involves an enormous sum of money each year—estimated at over two million dollars.

An examination of feeding stuffs sold in Kentucky showed that many of these feeds were adulterated with substances of inferior value,—bran, shipstuff, and mill products, generally, being adulterated with corn-cob meal, rice hulls, corn bran, peanut hulls, and even mahogany saw dust; cotton seed meal being adulterated with cotton seed hulls, and many mixed feeds being almost entirely composed of oat hulls and the by-products of factories making oat meal and lauded as superior feed for cattle, horses, etc.

Rice hulls, corn-cob meal and peanut hull meal were manufactured and shipped into Kentucky in carload lots for mixing purposes,—a Mill in Virginia shipping into this State as many as three carloads of ground peanut hulls a day for mixing purposes. These adulterants were sold to mixers of concentrated feeding stuffs, or millers, at \$7.00 to \$10 per ton, with the claim that they could be mixed to fully 20 per cent without being detected. To such an extent had this adulteration been carried on that the millers of the State either had to mix their feeding stuffs, in order to compete, or ship their products to States having commercial feeding stuffs law, where only pure feeding stuffs could be sold. The South-Eastern Millers Association and the State Millers Association took the matter up and asked the last legislature to pass an act regulating the sale of commercial feeding stuffs. Such an act was passed almost unanimously.

The enforcement of the law has been placed in the hands of the Kentucky Agricultural Experiment Station. As soon as the law went into effect, the Station began the inspection of commercial feeding stuffs and found many kinds of feeds on sale in the State,

often bearing misleading names and the prices were no indication as to their real value as feeds.

The law requires every bag or package of feeding stuffs sold in, or imported into, the State, to be tagged with a tag furnished by the Kentucky Agricultural Experiment Station, giving the name of the feed, the name and address of the manufacturer or dealer, the weight of the package, the percentage of protein and fat guaranteed by the manufacturer and the names of the ingredients from which it is made.

The protein and fat are the valuable essentials of commercial feeding stuffs. Choice cotton seed meal contains 42 per cent. protein; oil meal, 34 per cent.; bran, 15 per cent.; shipstuff, about 16 per cent; corn meal, about 10 per cent. A mixed feed having a tag on it guaranteeing only 7 or 8 per cent, protein shows at once that it is made up of inferior feeding substances, and high percentage of fiber usually indicates a low grade of feed.

The following table will give an idea of the feeding value of the substances commonly used as adulterants:

	Protein.	Fat.	Fiber.
Oat hulls	3.03%	1.06%	29.07
Peanut hulls	4.56"	0.81"	67.31"
Ground corn cob	2.58"	0.50"	30.10"
Rice hulls	3.60"	0.70"	35.70"
Cotton seed hulls	4.00"	2.00"	44.40"

To assist the consumer to readily ascertain by the tags the kind of feed he is getting, the Station prints three kinds of tags to be put on commercial feeding stuffs. First, a manila tag printed in black on attached to a feeding stuff indicates at once that the feed is a straight feed, that is, a feed made of one grain only, such as wheat, or corn, or cotton seed, etc. Second, a manila tag printed in red ink indicates the feed is made of the products of two or more grains, such as corn and wheat, or corn, wheat and oats, or cotton seed meal, bran and oats, etc. Third, a yellow tag attached to a feed stuff indicates that the contents contain an adulterant, or a substance or substances of little feed value, or a substance not classed as a feeding stuff, such as cotton seed hulls, oat hulls, peanut hulls, corn-cob meal, etc. To illustrate: A feed sold heretofore as cotton seed meal and containing only 22 per cent protein will have a yellow tag attached, and it cannot be sold as cotton seed meal,

because it is a mixture of cotton seed meal and cotton seed hulls. So, likewise, bran, shipstuff, etc., containing corn-cob meal, ground peanut hulls, etc., can not be sold as bran or shipstuff, and will have a yellow tag attached indicating that it is not pure.

The Station stands ready through correspondence, through its laboratories and through its inspectors, to furnish whatever information it can concerning the character and nutritive value of all feeds. The following inquiry and reply is a fair sample of the many queries we are receiving and our replies thereto.

The inquiry reads as follows:

"Two farmers were each loading with some feed from different establishments. Each feed had a guaranteed analysis, one having a Manila tag printed in black ink attached, marked "A", showing:

Protein	15.65	per cent.
Fat	4.70	" "

And the other a yellow tag, marked "B", showing:

Protein	9.81	per cent.
Fat	1.65	" "

Each feed contained about the same amount of roughness, and, from the examination of a casual observer, they appeared to be practically the same.

Will you tell us, from the standpoint of their value as a stock feed for cattle and milk cows, how these feeds should compare, and what should be the relative difference in price that the farmer should pay?

Our reply to the above inquiry was as follows:

"The food value of a concentrated feeding stuff depends almost entirely upon the amount of protein and fat it contains and especially is this true of the digestible protein and fat. In bran, shorts, etc., the protein is largely digestible. In products containing a small amount of protein, as cotton seed hulls, peanut hulls, oat hulls, corn-cob meal, etc., but a small per cent. of the protein is digestible.

Looking at the two samples from the analyses, "B" would indicate that the feed was a mixed feed. It could not be pure bran, pure shorts, or pure wheat product, or the by-products of any one kind; it could not be any of the concentrated feeding stuffs, as cotton seed meal, oil meal, or corn meal, for the small amount of

protein would exclude its being any of these. It could not be a pure corn product for the reason that it does not contain enough fat. Therefore, it must be a mixture and some ingredient of inferior grade must form a portion of its bulk. Consequently, it would be less valuable on account of the non-availability of protein which the analysis actually shows.

The value of "A" as a feeding product, in our judgment, would be worth twice as much as "B." If "A" sold for \$20.00 per ton, we would hesitate to pay \$10.00 per ton for "B."

We are sending you herewith a few points regarding the law and its enforcements. We shall be glad to have you co-operate with us in order that the provisions of the law may be more efficiently carried out and satisfactory results obtained.

Thanking you in advance for any assistance you may give us, we are

Yours very truly,

M. A. SCOVELL,

Director.

SOME FUNDAMENTAL FACTS IN FATTEN- ING HOGS AND STEERS FOR THE MARKET.

By E. S. Good, Animal Husbandman, Kentucky Agricultural Experiment Station.

To be an intelligent feeder of live stock for the market one must make a study of the fundamental principles connected with the growth and fattening of an animal, as well as a study of the composition and uses of the different foodstuffs and their relative commercial values. This knowledge may be obtained from reading the results of investigations carried on by our experiment stations or may be obtained, often expensively, by a long series of trials of different feeds or combination of feeds in the so called "practical way." In all events he should endeavor to feed the corn and roughages grown on his own farm, supplemented from time to time with purchased feeds as is warranted by the circumstances in the case.

Hogs and cattle produced for the market must be grown and then fattened or grown and fattened at the same time. The large packing houses desire animals well fattened for three reasons, (1) the fatter an animal the larger percentage of meat will they dress; (2) fat protects a carcass of meat from decay when ripening in the coolers of our slaughtering houses and; (3) the meat of a well fattened animal is more tender, juicy and palatable than is the case with a lean one.

The three general classes of nutrients into which our feedstuffs are divided are: (1) mineral matter or ash found in every fluid and tissue of the body; (2) proteids essential for the formation of digestive fluids and lean meat; (3) starch, fat and sugar, substances similar in composition and all used for the production of fat and bodily heat and activity. Feeds rich in ash and protein are, cotton seed meal, oil meal, mill feeds, and leguminous crops such as alfalfa, clover, beans and peas. On the other hand corn is one of the richest feeds in fat forming compounds but is poor in protein and ash.

The great question to the feeder of fattening stock is to so combine

muscle and bone building feeds with fat forming feeds as to get the best results, and to do this, he must take into account a considerable extent the age of the animal. For example, the Illinois Experiment Station found that feeding young pigs (ten weeks old) for six months on corn alone made a gain during that time of only twenty pounds per head. This is a striking illustration of what corn alone will do when fed to a young animal, a time in its life when feeds rich in protein and ash are needed. Every pound of gain cost in this instance, valuing corn at forty cents a bushel, thirteen cents. With pigs the same age fed corn plus a mixture of six bushels of cob charcoal, one bushel of wood ashes, two quarts of air slaked lime, eight pounds of salt and one and one quarter pounds of copperas (charcoal powders; copperas put in solution with water and all materials thoroughly mixed), a gain of 68 pounds per pig was secured. This mixture not only acted as a corrective, but furnished a needed supply of mineral matter not found in the corn. Each pound of this mixture eaten by the hogs was worth 7.9 cents. Another lot of hogs of the same age were allowed to run on clover pasture plus all corn and charcoal mixture desired. Clover furnished the needed protein to enable the young pigs to build up muscle tissue and at the same time corn furnished the elements for the production of fat. The pigs in this lot gained in the same time 188 pounds per head, each pound of which cost four cents. This test shows that young animals must be given feed rich in protein and ash for growth, and also shows that they can be fattened at the same time with an additional feed rich in carbohydrates such as corn.

To secure the best results in fattening a hog that has practically secured his growth sufficient feed of a protein character should be given to carry on the process of digestion and assimilation and to replace the wear and tear on the tissues of the body. In an experiment conducted at the Kentucky Experiment Station with hogs that had practically received their growth, it was found that if one-third of the corn ration was substituted by shelled say beans, that much larger and economical gains were secured than where corn alone was fed to a similar lot of hogs.

The same principle holds good in fattening cattle. If it is the purpose of the feeder to produce baby beef he must remember that the young animal must be kept growing and fattening from

start to finish—the proportion of flesh forming feeds to fat forming feeds decreased as the ripening process proceeds. However, it must be remembered that in order to secure economical results with two year olds, an age at which steers have practically received their growth, that they demand some protein in their ration, which may be obtained in clover or alfalfa hay or in concentrated feedstuffs such as cotton seed meal, linseed meal and gluten feeds.

Experiments have proven that feeding two year old steers on ear corn and timothy hay or ear corn and corn stover is not conducive of much profit as all these feeds are so poor in protein as not to furnish the amount needed by the animal in the fattening process. In these systems of feeding cattle one usually makes but the productive price of these feedstuffs, but if clover or alfalfa, or cow pea hay is substituted in place of timothy, or given in addition to the corn stover, or if a moderate amount of cotton seed meal or some other concentrate is fed with these feeds (corn stover or timothy hay), with a normal stock market on which to sell the cattle, the feeder will not only get a fair market price for these feeds, but in addition make an extra profit of 10 to 30 cents on every bushel of corn fed, and have a large part of the fertilizing constituents left on the farm in the form of manure to keep up the fertility of his land.

Do not be in too much of a hurry to get a steer on full feed of corn. Our experience has led us to believe that thirty days is soon enough for this purpose and from practical tests it has also been our experience that all things considered it is best to feed twice a day and to give the steer at each feed a little less grain than he will eat thus insuring a good appetite and lessening the danger of getting "off feed." As the grain ration is increased the roughage part of the ration should be decreased or the animal will be too paunchy to sell to the best advantage.

It should be remembered that when we are fitting a steer for the market that he is simply storing up energy in the form of fat and the more quiet you keep him the more he will store up. If he is allowed to roam over a large area at will, especially if the ground is wet and mud deep, a great deal of the nutrients of the feeds that would be stored as fat are used for the production of energy. See that the fattening animal is provided with a shed to turn the wind and sleet. If this shed is kept dry and well bedded the steer

will spend a good share of his time sleeping and respond with quick economical gains to the proper feed and all the salt and water he desires.

SOME POINTS IN SWINE HUSBANDRY.

J. Al. Dobie.

One of the first requisites in growing any animal for profit is a correct idea of its nature and its requirements as to food, care and management. The hog is, perhaps, when properly fed and cared for, the most profitable animal on the farm, and yet he is the least understood. Many farmers really believe he will do about as well with scarcely any shelter, with nothing but corn for food, and very indifferent treatment generally, as if sheltered in a dry, warm house, and given the best of food and care.

Only a few years ago the prevailing idea was that he was made up of about equal parts of stubbornness, contrariness and appetite; that the unclean spirit that Christ cast out of the man and allowed to go into the herd of swine was still paramount in the animal's make-up all through his miserable existence, from the time his first faint squeak was heard in the farrowing pen to the day when he was served up on the table; that a hog was nothing but a hog anyway, and all that was necessary was to put him in a muddy lot, with some boards thrown across a fence corner for shelter, to dump some corn to him two or three times a day, and then to trust to luck and moon signs for the balance.

Thanks to farmers' institutes and farm papers, these notions are rapidly passing away, and in the mind of every intelligent farmer the fact is becoming recognized that there is no animal that will respond more readily to kind treatment than the hog; that no animal has the same power of assimilation, or will make as many pounds gain for the food consumed, as the hog. And the man who has a family to support, or is trying to lay up some money with which to buy a home, or is striving to make improvement on his farm, or is struggling to pay off a mortgage, or any other debt, will find the hog a better friend and helper than any other of the

farm animals. But in order to do these things he must have a chance.

As a preface to what may be said on shelter, allow me to say that no man can afford to keep a brood sow a whole year for one litter of pigs. To be profitable she must, like a piece of machinery be run to her full capacity. If two litters are raised each year, one of them must necessarily be grown in cold weather, when dry and warm quarters are indispensable. The shelter need not be an expensive or elaborate affair, such as sometimes seen in books and papers. In fact, these complicated piggeries are usually a disappointment to their owners. It may be ever so cheap and temporary, but it must be clean, dry and wind-proof, and have a reasonable amount of suitable bedding, for the comfort of any animal has a great influence on its general health and thrift.

In order to establish some facts in regard to the effects of cold on fattening hogs, Mr. E. M. Shelton, of Kansas, some years since conducted a series of experiments on two pens of pigs. Five pigs were placed on the south side of tight board fence, five feet high, with no other protection except straw nests. The other five had dry, clean windproof quarters. Both lots were fed twice a day all the corn they would eat up clean. The experiment was begun in the fall and continued until after mid-winter. From the first the hogs that were properly sheltered made much the best gain, though the difference was not so marked in the mild weather, when the temperature was only about freezing, as in the severe winter. During four weeks of the coldest weather it required something over five pounds of shelled corn to make one pound of pork in the sheltered pens, while outside it required eleven pounds of shelled corn to make one pound of pork. But the most amazing difference was during the time when the average temperature was but little above zero. Then, in the sheltered pens, five pounds of shelled corn made one pound of pork, while with those not sheltered it required two hundred and twenty-six pounds of corn to make one pound of pork. In other words, a bushel of corn fed to hogs properly sheltered gave over eleven pounds gain, while every bushel fed in the open lot was practically thrown away. The same thing is occurring on thousands of farms all over the corn and hog belt of the United States.

The writer once bought a beautiful young brood sow of a man

we will call Mr. A. After bringing her home we were told by a shrewd neighbor who was looking at her that she was a very fine specimen, but when bought her of Mr. A. we ought, if possible to have bought an interest in Mr. A's swill-barrel, for there lay one of the secrets of his fine strain of hogs. This last statement was literally true.

We are apt to depend too much on breed and not enough on management. Stuart says: "It may be laid down as an axiom that breeding alone can produce nothing beyond what is inherent in the animals coupled, and their ancestors." We may exercise skill and judgment in mating the sire and dam, and the result may be an individual combining the good points of both and superior to either one of them, but we may depend with great certainty that nature never produces something out of nothing. It is food and management that makes a beautiful specimen of any strain of blood.

A skillful feeder will grow a more perfect animal out of a half blood than an indifferent feeder will out of one with the longest and most fashionable pedigree. This position does not undervalue pedigree, for it took a long effort of both breeding and feeding to establish the fixed characteristics of the improved breeds, but it is folly to magnify the pedigree extravagantly, and forget the essential agency that established the improvement and made the pedigree valuable.

It is not our purpose to try to boom any particular breed. Every man has a right to his own preference. It is sufficient to say that if a hog is wanted that will attain to a great size, is quiet—in fact rather lazy and sluggish, that will fatten readily at any age and yield a large proportion of lard, either the Chester White, the Poland China, or the Duroc Jersey will fill the bill. If a hog of medium size is preferred, one that is very prolific, always lively and active, that will hustle for his own living in pasture or woodland or in following cattle, that yields pork of the highest quality with a large proportion of lean, the Berkshire or the Belted Thin-rind will certainly answer the purpose.

But whatever the breed decided upon, the greatest care should be exercised in selecting the brood sow. It is one of the fundamental laws of breeding that the male parent determines mostly the outward form and structure, while the female determines the

internal structure and the constitutional strength or weakness of the offspring. Assuming that these surmises are correct, it must be apparent to every one that the judicious selection of the female is of prime importance, and that success is not assured without it. It is probably best to defer the selection until considerable growth has been obtained, that a more nearly correct judgment may be formed as to what their forms will be when matured. At this time she should be of a form known as rangy, that is, the opposite of compact; of loose and open build, yet quite broad on the back, with short neck and head, fine ear, heavy jowl, deep sides and heavy hams. She should be large and roomy, from healthy stock, a greedy feeder, and of great vitality, as indicated by large girth, just back of fore-legs. Courseness is allowable in the sow, yet there must be symmetry and a well developed female appearance. Above everything else, she should be of a stock that is well known to be prolific, as this characteristic without a doubt, is hereditary.

She should never be bred under eight months of age, and twelve would perhaps be better, as the act of reproduction is a heavy drain on the vitality of the young animal. During the period from breeding to farrowing time she should be fed rather liberally on foods rich in nitrogen, such as bran, middlings, oil meal, etc., and have pasture or green food, if practical. She should not be allowed to become over-fat, and she will not, if given proper feed in reasonable quantities, and be compelled, if necessary, to take plenty of daily exercise, which is of the greatest importance.

As farrowing time approaches, she should be separated from all other hogs and placed in a dry, sheltered pen, and be provided with a small amount of short hay or straw for bedding. Her feed at this time should consist for the most part of loosening slops, as costiveness and consequent feverishness must be carefully guarded against. When the critical time arrives, we believe it best to leave her severely alone and let nature take her course, for if the treatment thus far has been correct the chances are a thousand to one that both she and her offspring will do well without any fussing or disturbance on the part of the attendant.

As the sow is apt to be feverish at farrowing, she should have access to plenty of pure fresh water, but should have no food until she appears to be hungry, and then only a few handfuls of bran or middlings stirred in a pail of warm water. Do not tempt her

to eat, and be in no hurry to crowd her with food, as for the first few days the pigs require very little nourishment. Generally the tendency is to crowd them too much at the beginning, and then stint them when started, and when they should be fed liberally. After the first week, the ration should be gradually increased and by the time the pigs begin to eat she should be brought up to full feed and should now have all the milk producing food she will eat up clean three times a day. After the third month feed twice a day.

We can not insist too urgently on the importance of feeding the pigs largely through the dam. The drain on the vitality of the sow suckling a litter of eight or ten healthy, vigorous pigs is tremendous. There is no food for the growing pig that is equal to the dam's milk. The flow of milk, therefore, should be increased by every possible means, that the pigs may be kept growing and thrifty, and that the sow may not become a walking boneyard and have to be given a long time to recuperate before she is in condition to be bred again. The way to accomplish this is to feed liberally, three times a day, a well balanced ration. Pigs are usually fed too much corn and other foods too rich in carbohydrates. Instead, they should be fed nitrogenous or protein foods, as they require much more nitrogen than old hogs. By this means we secure a greater growth with a given amount of feed, and there is a more perfect development of bone and muscle, which indicates a condition of the system least liable to disease.

In our own experience we have found that, if nothing better can be done, it will pay to sell corn and buy bran, middlings and oil meal. These, with corn meal, wet up with milk as far as possible to a creamy consistency and fed in such quantities as they will eat up clean, and at the same time appear to be satisfied, will give excellent results.

The hog's stomach needs some kind of fibrous food to act as a divisor of the more concentrated foods and allow the gastric juices to penetrate the entire mass, and thus greatly aid in the digestion of the entire amount. The necessity of providing hogs with pasture and green food is becoming more and more apparent each year, even in the corn producing districts, and is unquestionably an important factor in the profitable production of pork. The liberty of a pasture field affords the growing pig that exercise so necessary to health and development, and the succulent grasses are rich in

muscle and bone forming material, are loosening and cooling to the system, and have a tendency to keep it free from disease. In his natural state the hog is a grass-eating animal, and the loss sustained by farmers each year in not following the dictates of nature in this respect is simply enormous. In short, keeping hogs entirely on concentrated foods is as unnatural as it is unprofitable. A wood lot is a most valuable adjunct to the hog pasture. Here he can find an abundance of shade, can root among the leaves to his heart's content, and find a large amount of plants, roots, insects, etc., that are just suited to his nature.

Healthy swine, that have been kept in such a manner, and for such a length of time as to develop a good-sized, properly formed frame, will, when put on full feed in the early autumn, lay on flesh very rapidly.

But the change from grass and other bulky foods to an exclusive corn diet must be gradual, and the feeding must be done with care and judgment, or the digestion will be so impaired that they can never afterward be fed with profit, and some may even be carried off by that convenient scapegoat, hog cholera.

After they have been brought up to full feed, it requires but little skill to feed and handle them successfully. If they have space sufficient to afford them comfort, cleanliness and a moderate degree of exercise; if they have access at all times to pure, fresh water, and are supplied with as much salt, charcoal and ashes as they want, it is then only necessary to be guided by this important principle, viz.: that the hog has an appetite beyond his power of digestion. It was the practice of our forefathers to keep corn by them at all times, but the elm-peeler and thistle digger of those times had an amount of vitality and hardiness far in excess of the improved breeds of to-day.

There is no use denying the fact that the quiet disposition, beautiful forms, and splendid fattening qualities of our improved breeds have been brought about at the expense of vitality and ruggedness. So it matters not at what stage of the fattening process, the hog should never be fed more than he will eat up clean before leaving it. We know from experience that hogs treated as here indicated will thrive and keep healthy without the use of drugs, such as sulphur, copperas, etc.; that they will seldom if ever be off feed; that there is but little to be feared from disease; and if

sold at any reasonable age his weight will exceed one pound for each day he has lived.

And, lastly, the owner will have reasons, substantial reasons, to bless the day when he resolved to study his nature and requirements, and, for the money there is in it, if not for humanity's sake, to treat this noble animal with consideration, and even with kindness.

SHEEP IN EASTERN KENTUCKY.

(Address delivered by W. T. Kane before the Powell County, Ky., Farmers' Institute.)

It is not my intention at the present time to speak of the adaptation of this (Eastern Kentucky) to the sheep and wool industry along any other lines than those most practical and beneficial to the novice in this line of live stock industry.

The sheep is truly the dual purpose farm animal, yielding to the good and attentive shepherd a crop of wool and a crop of lambs as a reward for his labor, care and kind watchfulness.

I shall not attempt to give you a full and detailed account of all the breeds of the golden hoofs, but will confine myself to such divisions or families as I think most profitable for the section of the country in which we live, both as to mutton and wool.

For this section of our great and vastly resourceful country I feel assured from my long and varied experience with sheep that what is known as the middle wool sheep is the most profitable sheep for all the hill country embraced in this eastern part of Kentucky. This middle wooled sheep embraces the very best of the mutton breeds and produce such lambs as those that have for the past few years been bringing from \$6 to \$7 per hundred pounds in the markets of the United States. In this class I will mention such breeds as the Southdowns and the Shropshiredowns. Pure-bred bucks of either of these breeds mentioned bred on the best grade of native ewes will produce just such a lamb as those that have been selling at the prices just mentioned. Native ewes are prolific breeders, good mothers, fair sucklers and with proper care will

produce and raise seventy-five lambs to each fifty ewes. Almost any farm in your county with one year's preparation will support fifty ewes in such a manner. This brings the farmer seventy-five lambs as an increase of flock and at least a wool clip of two hundred pounds.

Select these native ewes when the purchase is made by a careful examination as to age—by an examination of the mouth—and see that the skin has a clean rosy tinge, which indicates health and freedom from disease. As to conformation, she should have a short and well set neck, good round body at the heart, forelegs well apart, broad on the back and heavy low down hind quarters. Such a frame gives the ewe fine quality for a profitable shearer and lamb raiser. Such a ewe, coupled with a ram of either the breeds mentioned gives you a strong, well-formed lamb that is always a good seller as well as a good one to keep on the farm. This flock of fifty ewes and one buck makes an ideal flock for an average farm, where the grasses such as Kentucky blue orchard, red top and English blue are grown. The ewe carries her young five months and should not be bred so she will drop her lamb earlier than the first of April to insure good weather and guard against loss of lambs in winter storms.

During the winter the flock should have succulent feed with a small grain ration, that the ewes may be prepared for that trying season of giving birth to their young. The lambing season should be and can be restricted to three weeks, thus insuring a full crop of lambs and also even in size. At this season (April) a succulent pasture should be provided for the ewes to graze on, which flushes the milk and pushes the lambs to extra growth. Sheep should always be provided with a dry, well ventilated shelter, for much injury results from cold rains. When wet the wool parts on the back, and snow and sleet is admitted to the parting all along the spine and results in nasal catarrh, which finally results in a low condition and disease and death frequently occurs.

Sheep should never be caught or lifted up by the wool. This practice is cruel and very detrimental to the sheep, such tears the skin loose from the body and the secretive cellular process is destroyed and a patch of wool either is shed entire or fleece grown so it is worthless. This practice also has a tendency to impair the healthfulness of the sheep, as well as to make it wild and want to run away from its master—don't catch or lift sheep by the wool;

you lose money every time you do so. Don't tie a sheep to shear it; set it on its hind quarters when it is entirely helpless and has no power to scuffle.

Sheep often are ticked; in this condition they fall away by the incessant biting of these parasites, and if not relieved will dwindle and die. Dip them in any of the coal tar preparations advertised in first-class agricultural papers. Castrate lambs when young. By so doing the punishment is made less and the growth of the lamb is not retarded. All sheep should have their tails docked to promote cleanliness. Should burrs be on your premises, eradicate them before they get into the wool. Wool full of burrs is always docked in weight by the buyer, and there is no machine yet invented that takes the burdock burr from wool. Just buy a cheap piece of flannel and wear it next your body and you will soon get a hustling more on you in the direction of that new garment. Many young and tender skinned children are tortured beyond reason by wearing flannels in which these jagged, prickling burr points are woven in the woolen fabric. Free your farms of all such pests before they ruin your clip of wool. Some one says, "Sheep are scavengers." That's not true; it's slander on the "golden hoof." It's true he consumes some weeds, some barks or sprouts. Many of these he eats as medicine and not as food to his liking. See, he eats that astringent weed. Why? Because his system demands it. Another of the same flock you notice nips with apparent relish a weed highly laxative. While still another plucks some other growth and eats it as a condiment. Sheep are admirably adapted to a hill country where the farmer has strong aversions to hauling his manure from the low lands up the hill where fertility is lacking. This the sheep does for him, grazing on the low lands and hillsides, he seeks the high hill top and there rests and sleeps in the higher, dryer atmosphere which is more conducive both to his health and the value of the fiber of wool he is producing.

Had some of the farmers I have seen kept sheep instead of other stock, they would have not been compelled to move their excise for barns rather than haul their accumulation of manure. Sheep would have converted that roughage and grain into fertility and carried it to the hill top for them. I wish to speak briefly as to the process of wool's growth, that you may see the importance of proper care of your flocks. Wool is formed by the secretive organs or cells that lie under the skin, and in the skin of the sheep. At

sheep that is healthy and in good living flesh secretes a number of substances that are not wool, but are absolutely necessary for the growth of the wool fiber and its protection against adverse conditions and against itself. Here is a deep and interesting subject for the amateur wool grower to think on and investigate. This brings us back to the necessity of proper care and feeding of the flock that this chemical laboratory, so delicately formed in its arrangement in and under the skin of the sheep, may not be disarranged and the quantity and quality of its production be not diminished but increased. It was by a thorough knowledge of wool growth the sheep men of the mountain state of Vermont were enabled to produce the finest wool and the finest sheep by crossing the Spanish merino on the native ewe of Vermont that gave to the world its greatest achievement in sheep husbandry.

We have all known from our early boyhood that Vermont, the "Green Mountain State," has a surface very much like mountain Kentucky, with a winter many weeks' longer than Kentucky and a soil less fertile. Why should we toddle along in Kentucky with these natural advantages within our grasp and only 733,599 sheep in the whole state, and the average farm value of these forty-five cents per head less than our sister mountain state of West Virginia, where the dog remains untaxed.

In the State of Ohio, with longer winters and not so well adapted to the sheep industry, we find the average farm value of sheep ninety-four cents more than in Kentucky.

In the State of Indiana the average farm value of sheep exceeds that of Kentucky by \$1.33 per head. If the Kentucky sheep was worth what the Indiana sheep is the farmers of Kentucky would have more wealth by \$978,132.

These figures, taken from the different states' assessor's books, should stimulate every farmer in this grand old state of Kentucky to improve the quality of his sheep at least to a level with that of other states not so well adapted by nature to this branch of live stock husbandry as is our own Kentucky.

THE FARM BOY.

By R. C. Crenshaw.

"The Boy on the Farm," or "How to Keep the Boy on the Farm," has been the subject of "Theroist" for years. The agricultural papers have been filled with it; volumes have been written on it; lectures have been delivered on it; bulletins have been issued on it; yet we find the boy just as loath to stay on the farm as if never a word had been spoken or written on the subject. Why should the world give itself so much concern about the farm boy at all? Why is it of such vast importance that the farm boy should remain on the farm? Does the farm offer more advantages for his success than the city? Is the farm a broader field for intellectual expansion? Does the farm offer better advantages for business development? Because the farm boy is raised in a purer atmosphere, and has had better opportunities to develop a healthy and vigorous constitution, a robust frame, and a well balanced mind; is that a reason why he should remain on the farm? If these questions are answered in the affirmative, they are potent reasons for the boy staying where he was raised, on the farm. If they are answered in the negative, then why deny the farm boy the privilege of going where and doing what is most congenial to his feelings, and following up the bent of his inclinations, and developing the talent that nature has so richly endowed him with. If he has a natural talent for business along any particular line, such as that of a merchant, manufacturer, banker or broker, certainly the city offers better opportunities than the farm to succeed. If, perchance, his talent should run in the professional lines, as that of law, medicine or teaching, does not the city hold out better inducements for the development than the country? If he should become a politician, and want to study statecraft, does not the city offer a much broader field for operation than can be found in the rural districts—on the farm. While it is true that agriculture needs men of education, character, intelligence and business judgment, yet there need not be any apprehension that the farm will materially suffer for want of sufficient intelligence to protect and advance progressive agriculture. This want will always be supplied, and still there will be a surplus to go to the city

for the betterment of those who live therein. It always has been, and always will be, that the world must draw upon the farms for its most gifted sons. The farmer of today, just as he has been from the beginning of time, is the level-headed balance wheel of the morals, the religion and the politics of the country.

The two extremes of city life, the highest and lowest of city society, have ever been known for corruption, immorality and sinful practices, even to the point of producing the most degenerate and depraved of civilized human beings. Left to itself, with no outside influences, religion, or christianity, would soon degenerate into ritualistic forms, man worship and idolatry. Politics would be a complete farce, and the science of government would dwindle into anarchism, pure and simple. The farmer, after all, is the great independent thinker and actor along the lines that go to make the world better and wiser. The farm offers opportunities for the development of mind and body that can not be found in the city. Then let the rural districts still raise boys, educate them, qualify them for the various responsibilities of society, religion, commercialism and politics. Send this pure blood from the farm—the brain and brawn of the farm boy—to assert itself into the marts of trade, in the professions, in society and in the pulpit. Do not bother about the farm, that will take care of itself. Enough of the boys will remain on the farm to always keep society pure, religion on a solid basis and politics from running riot and threatening the foundation of government by destroying all law and order.

The city needs the farm boy. The State needs him. The nation needs him. The business world needs him. The bench and the pulpit need him. Keep all farm boys on the farm and you would deprive the world of the very best talent that can be furnished it from any source.

It is true that the world might and would jog along pretty well for a term of years without this fresh blood from the farm being injected into the arteries of commerce, trade and business; but it would do so at the expense of the best that could be furnished; and we ought not to be satisfied with anything short of the very best, when the best is procurable. Do not understand me to say that every boy who leaves the farm to better his condition in the city will succeed. Far from it. But I do mean to say that a much larger per cent will succeed and distinguish themselves than an equal num-

ber of city bred boys along the same line. This is not only true now, but has been true in all ages, and in every country where the field has been open to legitimate competition. Then, instead of always dinning into the ears of the farm boy that he must remain on the farm, where he will be a prey to the tools of commerce, trade and business, educate him, qualify him and teach him to give full vent to the talents with which he is so richly endowed, and send him forth into the world to take his position in society and teach the world new and better lessons, and make the world better and wiser because he has lived in it.

THE CULTURE OF GINSENG.

By J. W. Sears, Somerset, Ky.

Ginseng is a wild plant and to attempt to domesticate it or change its character, results in the destruction of the plant. It grows in almost any soil except low, wet land, is never found in swampy land and is mostly found growing on rich north hillsides.

The plant must have shade, either natural or artificially supplied. By the use of lattice or brush shade, the plant can be successfully used in the western states where the natural forest is unknown to ginseng and where they irrigate gardens and crops of all kinds.

In 1891 I began in a small way to grow ginseng as I understood the habits and characteristics of the plant. In its cultivation I followed nature as closely as possible. It is not so difficult to grow as is supposed by many. The beds are made in the forest by the first raking away the leaves and trash, then dig up the soil and make beds in which to plant the seed or roots. The beds are made three feet wide with $1\frac{1}{2}$ foot alley between them. They are any length desired, say twenty to thirty feet or even sixty to seventy feet is all right. Seeds are planted one inch deep; roots six to eight inches apart and about one-half to two inches deep. The rows across the bed should be eight inches apart and the plants about six inches apart in the row.

One square rod will yield about three hundred and fifty dollars in one crop. It requires about five or seven years to grow one crop to be of good marketable size from seed. About all the care or attention given the growing plants is to keep out all weeds. The beds should be mulched as soon as planted with leaves or straw or some good mulch, and need no cultivation at all.

If open field or garden is to be used for the beds, there should be rich soil from the woods or humus, either naturally or artificially made, mixed with the soil in which the roots or seeds are planted. This is easily obtained almost anywhere and has given perfect satisfaction.

The Chinese have used ginseng as a medicine as long as they have been people. The price has been gradually getting higher as the root is becoming more scarce. We have dealers in all large cities that buy the root. I sold the dry root this past season at \$7.25 per pound, the highest price for the season. I also sold some at \$6.50, some at \$7.00. On account of its scarcity we expect to see prices far better in the future than this. In the years 1816 to 1820 ginseng sold here at 16 2-3 cents per pound, in 1840 at 50 cents, in 1880 at 1.00 and in 1891 the root was worth \$2.25.

There have been a great many fairy tales about ginseng, many statements have been made extravagantly and not based on practical experience, yet if one will engage in the business in a business-like way, it will bring in more profit than any other crop grown on the same area of land, requiring but very little labor. The plant is perfectly hardy and can be transplanted without injury.

The Chinamen are not the only people that use ginseng as a medicine. Large quantities of it are consumed by Americans, also by people of other countries. The United States, no doubt, will soon have ginseng to export.

DARK TOBACCO.

By Chas. E. Bowman.

Dark tobacco is what is known as export, or Clarksville, Tenn., and Hopkinsville, Ky., types.

This tobacco is grown in 20 or 25 counties, or parts of counties in Kentucky and Tennessee, along the line between these two States. This also is much smaller than is commonly supposed, and the finer types are produced in a minor part of this territory. The poplar and oak ridge lands on our creeks and rivers make the finest, silkiest types, while the barrens or heavy soils make the coarser and larger types. The grade is determined to a very great extent by the cultivation, curing and manner in which it is marketed. Growing fine types and high grades of dark tobacco is as laborious a business as can be imagined. Tiring, disagreeable work for twelve months or more to produce that which is very much a matter of fancy—and that the best judges differ widely about.

The dark tobacco grower, the man who sows the seed, transplants the plants, pulls suckers, kills worms and works in this crop for twelve months does not receive one-half the wages he earns. Land, to be cultivated in dark tobacco, should be plowed in fall close and deep, putting all cover to the bottom of furrow. Early in the spring, when soil begins to dry, run a smoothing harrow over it and keep the top crust broken, thus preventing evaporation.

Soon as dry enough, two-horse plow shallow, or disc-harrow deep, should be used, pulverizing it four to five inches. I know of no tool quite so good as a Clark Cutaway Disc for this and similar work. The smoothing harrow must follow and land must be harrowed or disced after each rain, keeping top loose and mellow, and thus conserving the moisture. If manure is to be used spread it with manure spreader if can before the disc and cover it at once. Do not let the sun shine on the manure if it can be avoided. If commercial fertilizer is to be used I would suggest 4 per cent. ammonia, 8 to 10 per cent phosphoric acid, 10 to 12 per cent pure potash. Apply with fertilizer grain drill at rate 500 to 800 pounds per acre and follow with roller. Do this some fifteen or twenty

days before plants are ready to transplant. I insist that the ground should be kept mellow and pulverized. Do not let sun bake but keep crust broken with harrow or disc and you will be surprised how little manure and fertilizer you will need to make a heavy paying crop. This cultivation applies equally well to any crop, and suggests the old English maxim, "tillage is manure."

When the leaves on the plants in bed are about size of silver dollars lay off three and one-half feet each way with one horse plow that scours well. Let plow run deep, say four inches, and make good flat hills in the checks. Here is where many of us fail to get an even stand and to make a good crop. That the plants may all take root quickly and grow off evenly these hills must be absolutely free of clods or trash or any thing save mellow soil that will remain moist under most unfavorable conditions. Good plants are very essential, but only when transplanted into properly prepared hills can they accomplish the best results.

The hills can only be prepared by frequent use of disc harrow, smoothing harrow and roller, while ground is dry or mellow.

Between first of December and middle of March (and the earlier the better) while the ground is dry enough, select a southern exposure, where the soil is loose and mellow and rake off the leaves and trash. Turn the rake over, and with the head push off the loam and pulp on the surface of earth and throw it out—that the heat may penetrate as far as possible. Lay down every three feet small poles or pieces of old rails, across these lay more poles or old rails or anything of kind you can get. Walking on those laid down, thus keeping off the soil and preventing packing and leaving it loose and open so that the heat can penetrate to destroy all seeds and dry the ground out for an inch or so. After harrowing it over well leave it overnight so the heat from the coals and ashes can have all possible effect. Poke off the larger pieces of charcoal and chunks and work, dig or plow the ground up two or three inches, working all the ashes into the soil.

Harrow and rake until finely pulverized. Mix one table spoon level full of clean seed in a coal hod of ashes or fertilizer and sow to each 100 square yards of ground, sowing it each way, and t' diagonally. Whip the seed in with a light brush, then roll or tramp it carefully. The tramping I insist on, more especially if sowing is done after middle of February. About the first to the tenth of

March scatter some light brush over the bed and spread a canvas made of two and one-half cent cotton over it, pinning it down behind some rails or poles that are laid around the edges. This canvas must be taken off when leaves on plants are size of silver dollars, when you commence to prepare the hills. They will be ready to plant in a short time and hills prepared as above will not need to wait for season. When drawing plants keep the roots from the sun and put them in the hills just as fast as you can. Be careful to press dirt hard around the roots. Read A. D. Shamel on "Tobacco Breeding" and try his seed separator—can be gotten from Agricultural Department, Washington. Punch 10 or 12 holes with 6-penny nail in an old oyster can, split one end of a tobacco stick and slip it over the can and put a nail through it to hold it on; fill it with a mixture of 1 part Paris Green to 40 parts land plaster and shake it over each plant just as soon as transplanted and the cut worms and grass hoppers will not destroy them.

After four or five days scrape around the plant lightly with a hoe and pull a little mellow earth up around hill. Start double shovel or cultivator through it and keep ground loose and mellow. When plants are large enough pull off the lower leaves; keep pulling them off as long as you cultivate the tobacco. When the buttons or blooms appear the plants are ready to top.

Before this is done the dirt should be thrown to each plant with plow or shovel—by going across each way—following with the 14-tooth cultivator closed up.

Top the buttoning plants to 10 or 12 leaves; in week or so top the remainder at 6, 8 or 10 leaves. Keep the suckers and worms off by main force, enduring perspiration and backaches. "By the sweat of thy brow shalt thou grow tobacco," will now be suggested to you—and you will be ready to make oath that 25 cents per pound is not a high price for tobacco that demands so much hard work.

With Leggett's dry powder gun, apply 1 pound of Paris Green per acre before tapping, and again after going over first time tapping. Do not put this on while there is any dew or moisture on leaves. This will lessen the labor of worming 50 to 75 per cent and so much ill humor and violations of the ten commandments. When plants commence to gain and spot cut them by splitting them down nearly to the bottom leaf and then cutting off the stalk. Turn upside down, and when wilted hang 8 to 10 plants on each stick and hang the sticks in the barn about 7 inches apart. Do not fail

to shake the leaves apart, than stuck together in hauling. See that each plant hangs free and loose. After two or three days start slow fires. Smoke as much as can for 12 to 18 hours. Then increase the fires until the inside of barn gets hot to your hand. Continue this until the stem is cured half way up the leaf. Let the fires die out and keep the barn shut up preventing the light from damaging the color. When tobacco comes in order make up small fires and dry it out and do so until the stem is cured up to stalk. When it comes in order take down and put in bulk. Top the tails of leaves and pile it close and high as can, but do not get on it. It must be assorted, putting each grade, logs, seconds and leaf in separate piles and each tied in bundles 5 to 7 leaves each. These are pulled through the hands and straightened and bulked down. When done assorting and tying, pack into hogsheads from 1,500 to 2,000 pounds each. Each color and length of each grade should be to itself and be sent to an open competitive market under the supervision of our tobacco association where it should be offered to the highest bidder. These buyers are representatives of the different foreign demands—and our home manufacturers. The principle home-buyer is the American Snuff Co., that takes 15 to 20 per cent of our total production of about 125,000,000 pounds. This company is the largest manufacturers of snuff in the world, with its principle factories at Clarksville, Tenn.

The exporters are the Regal Governments and the buyers for the open markets. The Regal Governments are Italy, France, Spain, Austria and Turkey. Their agents buy this tobacco for 5 to 10 cents per pound and these different governments manufacture it into cigars, etc., and sell it to their subjects at 80 cents to \$1.50 per pound, raising more revenue in one year than the whole Black Patch does from tobacco in ten years.

The open markets are Great Britain, Germany, Belgium, Holland, Switzerland, Denmark, Sweden, Australia and Africa. Any one can ship tobacco into these countries and sell it. These governments do not buy tobacco and are known as "open markets." Open to the outside world to ship into and trade with The Regal Governments are those that buy the tobacco, manufacture it, and sell it and are closed to the outside world—are government monopolies.

CHAS. E. ROWAN.

**BIENNIAL REPORT OF M. A. SCOVELL,
DIRECTOR OF THE EXPERI-
MENT STATION.**

Honorable Hubert Vreeland,
Commissioner of Agriculture,
Frankfort, Kentucky.

Dear Sir:

I submit herewith a biennial report of the Experiment Station from July 1, 1905 to June 30, 1907.

The Station as now organized consists of the following divisions:

Division of Correspondence.
Division of Chemistry.
Division of Entomology and Botany.
Division of Agriculture.
Division of Animal Husbandry.
Division of Fertilizer Control Work.
Division of Food Control Work.
Division of Feed Control Work, and other inspection work.

The Station Staff is as follows:

M. A. Scovell, Director and Chemist.
A. M. Peter, Chemist Head of Chemical Division.
H. E. Curtis, Chemist, Head of Fertilizer Division.
H. Garman, Entomologist and Botanist, Head of Entomological and Botanical Division.
W. H. Scherffius, Agronomist, Head of Agricultural Division.
R. M. Allen, Head of Food Division.

J. D. Turner, Head of Feed Division.
J. O. LaBach, Chemist, Food Division.
Miss M. L. Didlake, Assistant Entomologist and Botanist.
S. D. Averitt, Assistant Chemist.
O. M. Shedd, Assistant Chemist.
Miss Lillie Liston, Stenographer, Food Division.
E. C. Vaughn, Assistant Entomologist and Botanist.
George Roberts, Assistant Chemist, Fertilizers.
E. S. Good, Animal Husbandman, Head of Animal Husbandry
Division.
J. W. Nutter, Assistant in Dairying.
Miss O. L. Ginochio, Stenographer.
H. D. Spears, Assistant Chemist, Feeds.
W. D. Nichols, Assistant Animal Husbandman.
Miss Annie Wallis, Stenographer.
E. F. Worthington, Superintendent of Farm.

The Experiment Station is doing work for the farmers of the State in various ways. It is endeavoring to keep in touch with them by correspondence. The farmers send inquiries and the Station takes pains to give them all information at its command. If the inquiry does not come under the investigations of any member of the Station Staff, literature from other stations and other sources is carefully looked up for the purpose of finding the desired information. The inquiries cover a large and varied field. If an inquiry is received in regard to the disease and treatment of plants, determination of insects, or testing the purity of seeds, the matter is referred to the Division of Entomology and Botany; if in regard to soils, or of a chemical nature, to the Division of Chemistry; if pertaining to the growth of tobacco, etc., it is referred to the Division of Agriculture, and so on.

The Station publishes from time to time bulletins giving the results of its work and these are sent to every citizen of the State expressing a desire for receiving them. Our mailing list is continually increasing and it is hoped that the time will come when all the farmers of the State may receive these bulletins. The following are the bulletins issued since July 1, 1905.

Bulletin 121. Commercial Fertilizers.

174 *Seventeenth Biennial Report Bureau of Agriculture.*

- Bulletin 122. Corn—Method of Selecting Seed Corn; Chemical Study of the Composition of a number of Varieties of Kentucky Corn.
- Bulletin 123. Commercial Fertilizers.
- Bulletin 124. On the Adulterants and Weed Seeds in Kentucky. Samples of Bluegrass, Orchard Grass, Timothy, Red Clover and Alfalfa Seeds.
- Bulletin 125. Observations and Experiments on Clover, Alfalfa, and Soy Beans.
- Bulletin 126. Soils—Methods and Uses of Soil Analyses; Analyses of Soils in 1904 and 1905; On the Determination of Humus in the Soil.
- Bulletin 127. The Inspection of Seeds under the Kentucky Pure Seed Law.
- Bulletin 128. Commercial Fertilizers.
- Bulletin 129. Tobacco. 1. Selection of Seed Plants and Care of Seed. 2. Improved Methods of Handling the Crop. 3. Elimination of Undesirable Varieties.
- Bulletin 130. 1. The Food of the Crow Blackbird. 2. The Corn Root Worms.

Fourteenth, Fifteenth, Sixteenth, Seventeenth and Eighteenth Annual Reports.

Since the last report we have occupied and equipped the new Station building which was completed February, 1905, and we find it well suited to the purposes for which it was erected. Separate chemical laboratories for fertilizer, food and feed work and research work have been established and spacious rooms are provided for these departments. Laboratories for entomological, botanical and bacteriological work have been established and equipped.

We have added greatly to our laboratories in the way of apparatus, purchasing very delicate microscopes, bacteriological apparatus, incubators for growing germs and platinum for the chemical laboratory, all amounting to several thousand dollars. We are now fitting up a laboratory for the Agriculturist in the Station building, where the mechanical separation of tobacco seed and other work connected with plant breeding investigations will be carried on, greatly increasing our facilities for this kind of work.

A new tobacco barn for experimental purposes has been erected on the Station Farm and a small experimental laboratory has been fitted up for the same purpose. The main object of these two new tobacco buildings is for experimenting as to the cause and prevention of house-burning of tobacco. The buildings are equipped with a blower, engine, boiler, heating coils, etc., so that the temperature can be kept at any degree desired, the amount of air equipped with and the air kept moist or dry as the experiments may indicate.

A piggery of modern design has been erected for the purpose of making a number of experiments with pigs as to their growth, fattening, etc., including a study of the improvement which may be effected in the soil by feeding or pasturing hogs in feed lots and pasture lots.

We have under construction a greenhouse for the study of soil fertility and for Prof. Garman's use in growing and studying insects, plants, plant diseases, and the like. This is a modern building in every respect, consisting of two fifty-foot, steel frame glass houses and a spacious head house with work rooms and storage space. It is situated on the same lot at the Experiment Station building proper. One of the glass houses will be devoted to work in entomology and botany and the other to pot experiments with soils in studying the fertilizer requirements of the soils of the State and other agricultural problems.

The scope of the Station work has been broadened by new duties imposed.

A bill known as the Adams Act passed both Houses of Congress and was approved by the President March 16, 1906. This bill provides additional appropriations for the Experiment Stations throughout the country. It provides for an appropriation of \$5,000.00 for the year 1906, and an annual increase of \$2,000.00 more each year for five years and thereafter \$15,000.00 each year. This, with the appropriation from the Hatch Act, will eventually bring the Federal appropriation to \$30,000.00 per year. This additional appropriation will greatly assist the Station in its original research work, as the bill provides that the fund is for original research or experiments only. For some time the Station has been wanting to do original research work on soils, clover, tobacco, animal nutrition, including feeding experiments, etc., and with this new fund available

we shall be able to broaden the scope of work and increase our scientific staff.

Obviously only a few projects can be planned or at present under this Act, as they should be large, important undertakings involving considerable expense, and it is essential that sufficient funds be allotted to each, so that the investigation may be carried out in a thorough and effective manner.

Under this Act, our Station has undertaken several lines of work.

Dr. Peter is making a systematic study of the soils of the State and experimenting, both in chemical laboratory and plots in field and greenhouse, to ascertain, if possible, some quick chemical method of analysis by which the wants of a soil, so far as plant food is concerned, can be readily learned. It is planned to extend the work on soils in co-operation with the State Geological Survey until a soil map of the State shall have been completed. A large number of samples have already been collected for this purpose.

Under this Act, Professor Garman is studying the nodule bacteria on the various clovers and leguminous plants for the purpose of learning if the nodule bacteria of one species of plant can be appropriated by others, and to find out through this work, if possible, the cause of "clover sickness."

Mr. Good, under the same Act, is studying the question of contagious abortion in domestic animals, with the object of learning if possible, whether or not animals can be made immune to the abortion germ.

The Adams Fund has given to the Station a research fund with which to work and it has given it an opportunity to undertake work, results of which may or may not be successful and which may take years to accomplish. But, if one important discovery is made, it will be worth all the money and effort given.

The Legislature of our State, at its last session in 1906, passed a law to prevent the adulteration of concentrated commercial feeding stuffs, known as **An Act to Regulate the Sale of Concentrated Commercial Feeding Stuffs, Defining Same and Fixing Penalties for Violation Thereof.** The Director of the Experiment Station is charged with the enforcement of the law which went into effect June 30, 1906. For the enforcement of the law, the Station receives

twenty cents per ton for all commercial feeding stuffs sold in the State. Since its passage the Feed Division has been organized and Mr. J. D. Turner placed in charge. Two or three inspectors and sometimes more have been in the field collecting samples, inspecting stores, etc. 1212 samples of feeding stuffs have been collected and analyzed. Over 2,500 letters have been sent out from this Division, and eight general circulars, giving information in regard to the law and its requirements, have also been sent out, while a bulletin treating of the work done under the law and giving information as to feeding stuffs is now in press. 330 firms were registered in 1907.

The Legislature at its last session amended the Seed Law and placed its enforcement in charge of the Experiment Station. Since the law was enacted, 1498 samples have been collected, of which 1187 have been examined. The number found adulterated is 66, as follows:

Blue Grass	215	adulterated,	31	(14.4%)
Timothy	381	"	1	(0.2%)
Orchard Grass	150	"	32	(21.3%)
Red Clover	304	"	2	(0.6%)
Alfalfa	91	"	None.	

In addition to samples regularly collected as provided for in the law, we have had numerous samples sent us by the farmers and seedsmen for examination. This latter work is growing and as our work becomes more familiar to farmers and seedsmen, I expect this branch of our duties to increase greatly. It has hitherto been done without expense to applicants, and I think that this branch of the work should so continue, unless at some time it becomes so great a burden as to interfere with our other work.

The good effect of this work is, I believe, already apparent in the increased care shown by seedsmen and farmers in buying seeds and in the smaller number of adulterated samples discovered by us recently.

The Seed Law is still defective and should receive the attention of the next Legislature.

Professor Garman, Entomologist and Botanist of the Station, is entrusted with the enforcement of the Nursery Inspection Law

178 *Seventeenth Biennial Report Bureau of Agriculture.*

of the State, which has been in force for ten years, and Professor Garman says:

"I think we can claim to have kept Kentucky as free from San Jose Scale and other destructive pests as any official charged with similar work in the country. The law was enacted at the time when such legislation was in its infancy and difficulties impossible to foresee at the time have since been discovered, and to some extent have been obviated by more recently enacted laws in other States. For eight years, the Entomologist and Botanist of the Station inspected single handed the forty nurseries in Kentucky. Of late, he has been authorized by the Director to make use of assistants employed in the Division."

The Director of the Station is also charged with the enforcement of the Pure Food Laws of the State. The State appropriates \$10,500.00 or so much of it as is necessary, each year for the enforcement of these laws.

During 1906, 1,415 samples of food have been taken from various markets throughout the State and analyzed. In addition to this 332 miscellaneous official samples have been analyzed, making a total of 1,747. Out of this number 556 were found to be adulterated, 911 inspections have been made as to the sanitary condition of dairies and 300 inspections of milk depots. In many instances, conditions were not only bad, but even filthy, and especially was this true of many dairies where distillery slop was fed to dairy cattle. 470 violations have been reported to the courts and 266 convictions have been secured, while 153 reports are still pending. The general results since the law went into effect in 1898 have been most gratifying.

The enforcement of the Fertilizer Law is also entrusted to the Experiment Station, and during the past two years 1,225 fertilizers samples have been analyzed. There have been 745 brands registered, for which 1,652,721 tags have been printed during the two years, these being sent to the various firms doing business in the State.

Besides the work under the Adams Act, the Chemical Division has made in the past two years, 851 analyses, including those of soils, forage plants, wheat, corn, minerals, rocks, and other materials.

The Division of Entomology and Botany, outside of original research work under the Adams Act, has continued the testing and proving of forage plants in the plots, of which there are now 147.

The rotation of plots, arranged with the United States Department of Agriculture some years ago, still continues and begins to show results. A second series was started in 1906 on a somewhat different basis and these, too, promise interesting results.

Some experiments, promising interesting results to fruit growers, have recently been undertaken by this Division in Hardin county on a commercial orchard. Twenty-four trees, consisting of two varieties of twelve each, have been set aside for same careful spraying tests to show the benefit of different treatments. These experiments will be continued during a series of years.

In the Agricultural Division, during the two years, experiments in breeding tobacco and corn have been undertaken. Variety tests of wheat have been made, also experiments in the dairy line.

The work of tobacco breeding has been conducted in co-operation with the United States Department of Agriculture. During 1906-1907 Mr. W. H. Scherffius, our Agronomist, gave his entire time to this work under the Department, but beginning with July of this year Mr. H. Woolsey and Mr. B. E. Brewer have been devoting their whole time to the Department, while Mr. Scherffius has general supervision of the work. A large amount of work is being done in this Division in separating and cleaning tobacco seed for the farmers of the State.

In 1906, Mr. E. S. Good was elected Animal Husbandman of this Station. He has organized the Division of Animal Husbandry and will devote the greater part of his time, for the next two or three years, to work under the Adams Act, studying contagious abortion in domestic animals, as indicated elsewhere. This Division has direct charge of the dairy, breeding of cattle, hogs and other live stock, experiments as to feeding of same and improvement of breeds.

The Stations Staff has assisted very generally in Farmers' Institutes. This is an important work of the Station and brings the College and Station directly in contact with the farmers of the State. The Act passed by the last legislature appropriating money to the Department of Agriculture for institute work and requiring that an institute be held in each county each year, creating an interest among the farmers and there is a growing sentiment among them in favor of having some of the Experiment Station officers attend their annual and special county institutes, for the purpose of discussing the various lines of work under investigation. Generally, as far as we

180 *Seventeenth Biennial Report Bureau of Agriculture.*

could, some of the members of the Station Staff were sent to one or more of these Institutes. If there was a desire for a discussion of dairy work, Mr. Good, or one of his assistants, was sent; if one on growing tobacco, Mr. Scherffius, or some member of his Division, attended, and so on.

The Station has been co-operating with the State Department of Agriculture in several lines of work and this co-operation has been of the utmost help to the Station and, we believe, to the Department also.

Respectfully submitted,
M. A. SCOVELL, Director.

Experiment Work.

Lexington, Ky., November 25, 1907.

Hon. Hubert Vreeland,
Commissioner of Agriculture,
Frankfort, Kentucky.

Dear Sir:

In compliance with Section 6 of the Fertilizer Law, I append herewith the Financial Statement showing the receipts accruing under the law, also expenditures, from July 1, 1905 to June 30, 1907, inclusive.

Yours very truly,
M. A. SCOVELL, Director.
Kentucky Experiment Station.

Ledgerized statement of the receipts and expenditures of the Fertilizer Account from July 1, 1905 to June 30, 1907:

STATEMENT JULY 1, 1905 to JUNE 30, 1906.

Deficit July 1, 1905 -----	\$13,600 48
Receipts -----	22,924 23
	<hr/>
	\$ 9,323 75

Seventeenth Biennial Report Bureau of Agriculture. 181

Expenditures.

Salaries	\$5,512 50
Labor	3,497 61
Printing tags	1,373 05
Publications	1,825 40
Stationery	47 78
Express and freight	47 92
Chemical app and Supplies.....	134 38
Seeds and sundries	114 43
Fertilizers	246 97
Tools, implements and machinery	39 92
Furniture	72 05
Inspecting fertilizers	580 66
Traveling expenses	91 55
Contingent	2 20
Building	1,009 75
	<hr/> \$14,596 17

Deficit June 30, 1906 \$ 5,272 42

STATEMENT JULY 1, 1906 to JUNE 30, 1907.

Deficit July 1, 1906	\$ 5,272 42
Receipts	25,594 28
	<hr/>
	\$20,321 86

Expenditures

Salaries	\$5,250 00
Labor	3,391 15
Printing tags	1,456 64
Publications	290 60
Postage and stationery	1 65
Freight and express	94 01
Supplies	20 30
Fertilizers	91 26
Furniture	590 75
Inspecting fertilizers	511 28
Traveling expenses	66 75
Building and repairs	366 00
Purchase land	7,000 00
	<hr/>

\$19,130 39

Balance on hand June 30, 1907 \$ 1,191 47

**REPORT OF E. E. CARTER, ACTING
ASSISTANT FORESTER.**

Hon. Hubert Vreeland,
Chairman, State Board of Agriculture,
Forestry and Immigration,
Frankfort, Ky.

Dear Sir:

I am very glad to send you under separate cover, a report of the work done last summer on the study of forest conditions of Kentucky.

As you know, it was decided after conferring with several members of your Board last July to start the work in the eastern part of the State, as that is the most important timber-producing region. Although a relatively small part of the State has been covered by this study, the conditions disclosed indicate an urgent need for a vigorous campaign of education among the owners of timber lands if the forest areas of the State are to be kept productive. It has been shown that there are great possibilities in the future for the continuance of a revenue from forest lands, and it will be universally admitted that such a revenue will add greatly to the prosperity of the State.

The best way to secure good results from such a campaign of education would be to appoint a State Forester, who should be a man of technical training and experience. His duties would be to discuss with land owners the advantage of conservative lumbering of the scattered old stands which are left and of the improvement of the second-growth forests on the lines indicated in this report. It can be confidently asserted from the experience of other States which have taken this stand that the results more than justify the expense in the continued and increased produc-

tiveness of forest lands in the State, and the support of wood-using industries, by maintaining a supply of raw material, is of inestimable value to any Commonwealth.

In this report directions for the production of the more valuable young trees in the forest, for care in lumbering the present stand, and for the extension of productive forests to areas unsuitable for agriculture have been given. To secure the carrying out of these directions they must be placed before the people owning the land. This, then, will be the first duty of the State Forester; or should it be deemed inadvisable to appoint such an officer, the duty will devolve upon the State Board of Agriculture, Forestry and Immigration.

By far the best way to secure good results is by meeting the land cludes the preparation of the report and the compilation of the map. A balance of about \$1,700 out of the total amount of \$4,000 appropriated by the State and Forestry Service still remains available, with which it is intended to continue the study in adjoining counties, following the plan already adopted in the present report. This amount will not be sufficient, I am afraid, to complete the study, even of the mountain counties, so that if this report meets the approval of your Board I suggest that a further appropriation of \$2,000 be made. The Forest Service will again be glad to appropriate a similar amount. With this additional \$4,000 a party could be kept in the field all next summer. Profiting by the experience of the present season, more rapid progress could be made and a report submitted that would be of great advantage to the State.

If desired, the Forest Service will also be glad to co-operate with you in drafting any forest fire laws or any other forest laws which you may wish to place before the State Legislature at the coming session.

The accompanying report leaves much to be desired in form and directness. It is to be remembered also that it represents a study of only a small proportion of the total area of the State. It was prepared under pressure in order to send it to you when promised. In reading it over I would ask you to keep this in mind as the reason, if it can not be considered the excuse, for poor statement or arrangements. The facts, however, can be vouched for. I hope that in its present form the report will meet with your approval, and I assure you that the Forest Service will be pleased to give you any

additional suggestions which may be of assistance to you in dealing with the forest question in the State of Kentucky, and that the owners on the ground and explaining to each what course of action will bring the best results for his particular tract. This a technically trained State Forester could do better than any one else. If such a course is advisable, the State Board can do a great deal through the distribution of printed matter, such as selected portions of this report, among the owners of lands on regions to which the recommendations are applicable. The appointment of a State Forester is urgently recommended. If this is impossible, it is recommended that the campaign of education be pressed by the present efficient Board of Agriculture, Forestry and Immigration.

Eleven counties have so far been covered in the prosecution of this study at the approximate cost of \$2,300. This amount in Service would also gladly continue the co-operation, which it has found both pleasant and profitable, with your State.

Very truly yours,

E. E. CARTER,
Acting Assistant Forester.

TABLE OF
ROADS IN KENTUCKY.
1907.

The following report was compiled very carefully and is the only complete statement of the roads in Kentucky which has ever been issued to date. Much valuable information is contained in the report and will be of assistance to those interested in the development of the roads in Kentucky.

It is a noticeable fact that fifty counties out of our one hundred and nineteen have not a single mile of turnpike within their boundaries; fourteen counties have less than twenty miles. One county boasts of three-fourths of a mile. We have a total in the State of 9,372 miles of turnpikes, while the length of the dirt roads in the State measure 4,583 miles.

There are only eleven counties having toll roads, sixty-six counties levy a tax to maintain their roads, while the others still adhere to the militia system.

Circular No. 58 issued from the office of Public Roads of the United States Department of Agriculture contains some interesting statistics about the public roads of Kentucky. The circular is based on data obtained in 1904. It shows that at that time there were 57,137 miles of public roads in this State, 1,408 miles of which were surfaced with gravel and 8,078 with stone. There was one mile of road to every 37 inhabitants and one mile of improved road to every 226 inhabitants. The county containing the greatest total mileage is clay, with 1,600 miles of road, with only one mile of gravel and ten miles of stone. The second largest mileage of road is Elliott, with not a single mile of improved road. There are 49 counties without a single mile of improved road within their boundaries. The largest amount expended on roads by any one county is Jefferson, which is credited with \$120,000. This county is credited with a total of 550 miles of public roads and 262 miles of improved roads. Fayette county comes second in amount of annual expenditures, with \$62,000 credited and a total of 375 miles of road, of which 360 are improved. Bourbon and Scott counties make nearly as good showing as Fayette, the former having 325 miles of road, 305 of which are improved, and the latter 400 miles of road, with 375 of them improved. The smallest mileage credited to any county in the State is 75 miles which is the total for Martin county, none of which are improved.

BULLETIN 188. Kentucky Experiment Station.

Results of Spraying Apple Trees Before and After Blooming.

By H. Garman, Entomologist and Botanist of the Kentucky Agricultural Experiment Station.

With the view of showing the effect of arsenate of lead as compared with Paris green in checking the injuries of the codling moth and to show the effectiveness of spraying with these mixtures when the trees are in full bloom as compared with spraying after the petals have fallen, the experiments described below were carried out in 1907 in the apple orchard owned by Mr. G. C. Scheible of Tip-Top, Hardin county, Kentucky.

The orchard occupies about twenty-five acres of land, and consists in great part of Ben Davis, Rome Beauty, York Imperial and Maiden's Blush. The large number of thrifty trees of the same variety and age in the orchard renders it particularly well suited for experimental work of this sort, and with the care bestowed on the spraying by Mr. Scheible and his men, and again in harvesting the fruit so that it could be examined carefully it was possible to get data of some interest and value. The season was, however, a peculiar one, and the spraying did not show anywhere in the State the decided improvement in the quality of the fruit that it generally does. After the blossoms expanded in the spring, a cold spell of weather, with several frosts, and snow at times, kept them in a stationary condition for weeks. At one time the partly expanded blossoms could be found adhering to each other in compact clumps as a result of the freezing. It seemed then that no crop would set. Even after the first applications were made, it appeared probable that every young apple would fall, as many of them did fall later. The crop was



Fig. 1.—Orchard belonging to G. C. Scheible, Tip Top, Hardin County, Kentucky. In Bloom, Spring of 1907.

light as a consequence, and this was especially true of the Ben Davis which commonly bears some fruit when other varieties fail completely. The only variety that set a full crop was York Imperial, the trees of which were loaded with very smooth apples.

The apples were picked and examined September twelfth. Following is the plan of the experiments together with details of results.

PLAN OF EXPERIMENTS.

BEN DAVIS.

Arsenate of lead. (1 lb. to 10 gals. water; 3 gals. per tree).

Sprayed when in full bloom: April 11 and May 11 (3 trees).

Sprayed after petals fell: April 29 and May 11 (3 trees).

Sprayed when in full bloom: April 9 and April 29 (3 trees).

Sprayed after petals fell: May 11 and May 23 (3 trees).

ROME BEAUTY.

Arsenate of lead. (1 lb. to 10 gals. water; 3 gals. per tree).

Sprayed when in full bloom: April 29 and May 11 (3 trees).

Sprayed after petals fell: May 11 and May 23 (3 trees).

Paris green and lime. (4½ oz. Paris green; 1 lb. lime; 40 gals. water; 2 gals. per tree).

Sprayed when in full bloom: April 29 and May 23 (3 trees).

Sprayed after petals fell: May 11 and May 23 (3 trees).

Bordeaux mixture and Paris green. (5-6 lbs. copper sulphate; 4-8 lbs. lime; 5 oz. Paris green).

Sprayed after petals fell: Between May 11 and May 23.

RESULTS OF EXPERIMENTS.

Experiment 1. (Arsenate of lead).

Three trees, Ben Davis, sprayed April 11, when in full bloom, and again May 11.

Apples rather rusty and small. Some distorted. Foliage in fair condition. Yield: 136.5 lbs. of firsts; 27 lbs. culls.

Total number of culls, 197:

Affected with codling moth,	5 (2.53%).
Affected with bitter rot,	42 (21.31%).
Affected with brown rot,	8 (4.06%).
Affected with scab,	20 (10.15%).

Experiment 2. (Arsenate of lead).

Three trees, one York Imperial (by accident) and two Ben Davis sprayed April 29 and May 11, after petals fell, with arsenate of lead.

York Imperial:* Apples smooth, of medium size, average about 3 inches in diameter. Well colored. A little scab, bitter rot, and codling moth. Foliage in fine condition.

Yield: 415 lbs. of firsts; 59.25 lbs. culls.

Total number of culls, 296:

Affected with codling moth,	3 (1.01%).
Affected with bitter rot,	146 (49.32%).
Affects with brown rot,	7 (2.36%).
Affected with scab,	31 (10.46%).

Ben Davis trees sprayed at same time as York Imperial: Apples mostly small and rusty, with some prominences due to weather. An indifferent lot. Foliage in very fine condition, though not as good as the York Imperial. Better than the average Ben Davis sprayed with Bordeaux mixture.

Yield: 109.5 lbs. of firsts; 23 lbs. culls.

Total number of culls, 165:

Affected with codling moth,	1 (0.60%).
Affected with bitter rot,	63 (38.18%).
Affected with brown rot,	none (0.00%).
Affected with scab,	17 (10.30%).

Experiment 3. (Paris green and lime).

Three trees Ben Davis sprayed April 9, in full bloom, and April 29.

*One York Imperial tree was sprayed with these trees under the supposition that it was Ben Davis. It was out of place in the orchard and the fact that it was not the same as the others was overlooked by both Mr. Scheible and myself until after the spraying was done.

190 *Seventeenth Biennial Report Bureau of Agriculture.*

Apples rusty, some distorted, small. Leaves fair.

Yield: 105.5 lbs. of firsts; 30.5 lbs. of culls.

Total number of culls, 240:

Affected with codling moth,	47 (19.58%)
“ “ bitter rot,	26 (10.83%).
“ “ brown rot,	8 (3.33%).
“ “ scab,	65 (27.08%).

Experiment 4. (Paris green and lime).

Three Ben Davis trees sprayed April 29 and May 11, after petals fell.

Apples rather small and rusty, some distorted. Foliage fair.

Yield: 114 lbs. firsts; 60.5 lbs. culls.

Total number of culls, 197:

Affected with codling moth,	5 (2.53%).
“ “ bitter rot,	42 (21.31%).
“ “ brown rot,	8 (4.06%).
“ “ scab,	20 (10.15%).

Experiment 5. (Bordeaux mixture).

Tree Ben Davis trees sprayed between May 11 and May 23 after petals fell.

Apples rusty. Foliage not very good. Thin and spotted.

Yield: 43.5 lbs. of firsts; 24 lbs. culls.

Total number of culls, 187:

Affected with codling moth,	46 (24.59%).
“ “ bitter rot,	32 (17.11%).
“ “ brown rot,	9 (4.81%).
“ “ scab,	29 (15.50%).

Experiment 6. (Arsenate of lead).

Three Rome Beauty trees sprayed April 29, before petals fell, and May 11.

Apples small and scabby. No distortion or rust, such as appears on all the Ben Davis. Foliage light green and in excellent condition.

Yield: 159.5 lbs firsts; 70 lbs. culls.

Total number of culls, 508:

Affected with codling moth,	42 (8.26%).
“ “ bitter rot,	none (0.00%).
“ “ brown rot	10 (1.96%).
“ “ scab,	507 (99.80%).

Experiment 7. (Arsenate of lead).

Three Rome Beauty trees sprayed May 11 and May 23, after petals fell.

Apples small and scabby. No distortion. Leaves fine.

Yield 131 lbs. firsts; 68 lbs. culls.

Total number of culls, 546.

Affected with codling moth,	15 (2.75%).
“ “ bitter rot,	none (0.00%).
“ “ brown rot,	8 (14%).
“ “ scab,	546 (100%).

Apples smaller than in No. 6.

Experiment 8. (Paris green and lime).

Three Rome Beauty Trees sprayed April 29, before petals fell, and May 23.

Apples average small. Foliage fine.

Yield: 242 lbs. firsts; 57 lbs. culls.

Total number of culls, 423.

Affected with codling moth,	61 (14.42%).
“ “ bitter rot,	none (00.00%).
“ “ brown rot,	19 (4.40%).
“ “ scab,	291 (68.79%).

Experiment 9. (Paris green and lime).

Three Rome Beauty trees sprayed May 11 and May 23, after blooming. Foliage good.

Yield: 43 lbs. firsts; 30.5 lbs. of culls.

Total number of culls, 258.

Affected with codling moth,	46 (17.82%).
“ “ bitter rot,	none (00.00%).
“ “ brown rot,	1 (0.38%).
“ “ scab,	257 (99.61%).

Six apples with dead rot at eye.

• Experiment 10. (Bordeaux mixture).

Three Rome Beauty trees sprayed between May 11 and May 23, after petals fell.

Foliage not as good as in any of the other Roman Beauty examined, but better than Ben Davis.

Yield: 73.5 lbs. firsts; 42 lbs. of culls.

Total number of culls, 349:

Affected with codling moth,	56 (16.04%).
“ “ bitter rot,	none (00.00%).
“ “ brown rot,	6 (1.71%).
“ “ scab,	342 (97.99%).

TABLE SHOWING RESULTS OF SPRAYING.

Variety.	Mix't. used.	Condition of Blossoms.	Yield lbs.		No. of Culls.	Per Cent. of Injury to Culls.			
			Firsta.	Culls.		Cod- ling moth.	Bitter rot.	Brown rot.	Scab.
Ben Davis	Arsenate of lead	In full bloom	136.5	27.0	197	2.53	21.31	4.06	10.15
York Imp	Arsenate of lead	Petals had fallen	415.0	59.25	296	1.01	49.32	2.86	10.46
Ben Davis	Arsenate of lead	Petals had fallen	109.5	28.0	165	0.60	38.18	0.0	10.80
Ben Davis	Paris green and lime	In full bloom	106.5	30.5	240	19.68	10.88	8.33	27.08
Ben Davis	Paris green and lime	Petals had fallen	114.0	60.5	197	2.53	21.31	4.06	10.15
Ben Davis	Bord. mixt. and Paris green	Petals had fallen	48.5	24.0	187	24.69	17.11	4.31	16.50
Rome Beauty	Arsenate of lead	In full bloom	169.5	70.0	503	8.26	0.0	1.96	99.80
Rome Beauty	Arsenate of lead	Petals had fallen	131.0	68.0	546	2.75	0.0	1.46	100.00
Rome Beauty	Paris green and lime	In full bloom	242.0	57.0	423	14.42	0.0	4.49	68.79
Rome Beauty	Paris green and lime	Petals had fallen	43.0	30.5	258	17.82	0.0	0.88	99.61
Rome Beauty	Bord. mixt. and Paris green	Petals had fallen	73.5	42.0	349	13.04	0.0	1.71	97.99

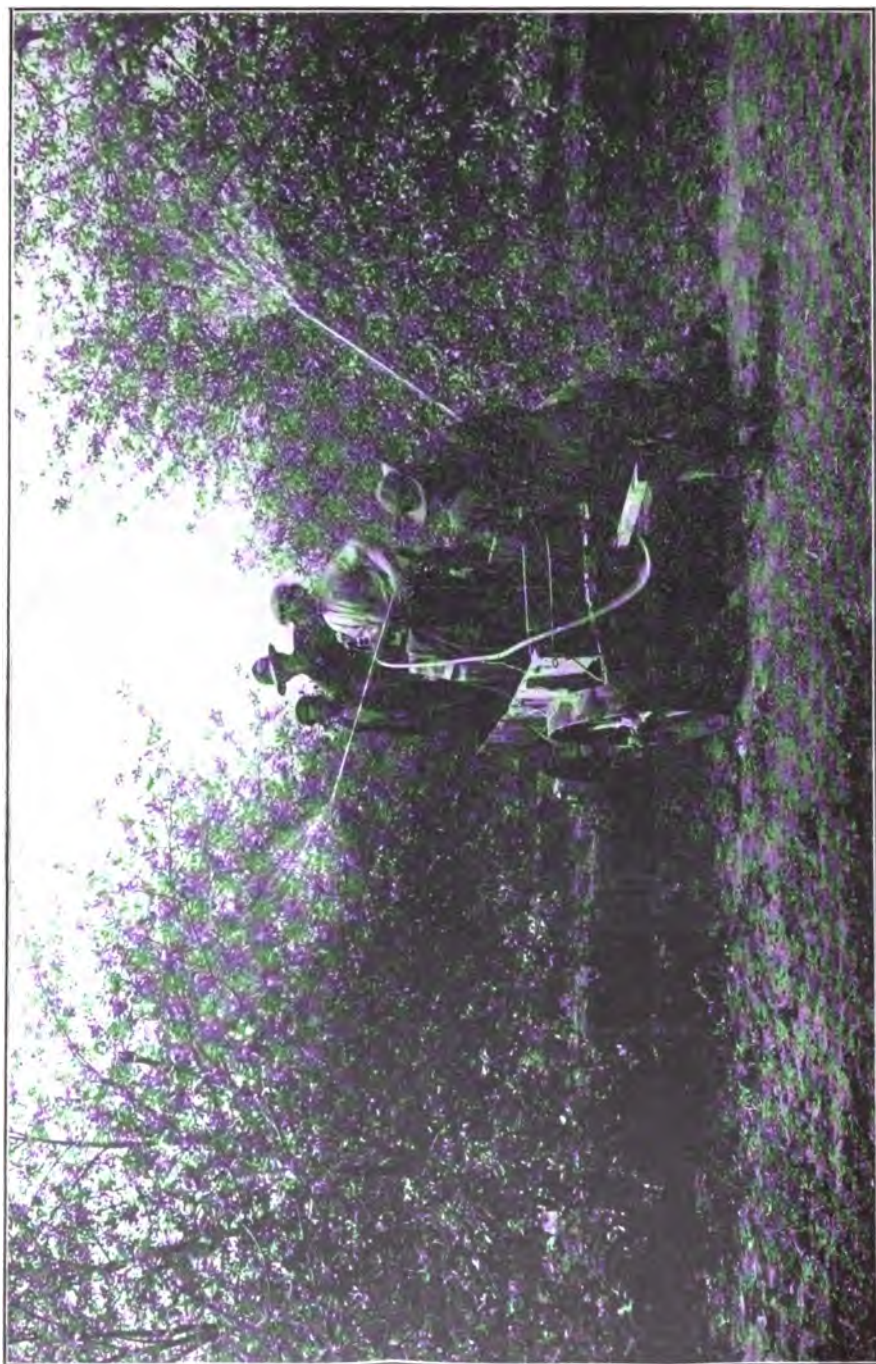


Fig. 2—Spraying with Bordeaux Mixture, Hardin County, Spring of 1907.

Results with Arsenate of Lead.

This insecticide is rapidly commending itself to progressive fruit growers because of the ease with which it can be kept in suspension once thoroughly mixed with water, and particularly because it has no injurious effect on the leaves and fruit. Unfortunately it is not generally kept by local dealers in insecticides, and the time required to get it from manufacturers and dealers at a distance frequently has the effect of leading fruit growers to continue using the better known and more generally available insecticide, Paris green. As used by the writer, arsenate of lead has not proved effective when mixed with water in the proportions ordinarily used for Paris green. Some of our fruit growers have failed with it because they were not aware of this difficulty. The strength (1 pound to 10 gallons) employed in these experiments may seem excessive, and certainly increases the cost, but from my experience with the poison, it seems to me doubtful if as good results with codling moth will be obtained with very weak mixtures.

Three gallons of the mixture means an application of 4.8 ounces of arsenate of lead per tree. With the poison costing 16 cents per pound and two such applications as were given in the above experiments can be made at a cost of 9.6 cents for materials. This does not seem excessive for a season's spraying, provided the injury from codling moth is sufficiently reduced.

Averaging the percentages of injury from codling moth on the twelve trees sprayed with arsenate of lead (6 before and 6 after the petals fell) gives 3.53%. The percentages, it must be remembered, are in all cases taken from the culls alone, and are lower if derived from the total yield in each case. The average per cent. of injury on the trees sprayed with arsenate of lead was just about $\frac{1}{4}$ as great as that on the trees sprayed with Paris green and lime.

The average percentage of injury on the trees sprayed with arsenate of lead while the trees were in full bloom was 5.39 as against only 1.67 on all the trees sprayed with this insecticide after the petals had fallen. The percentages of injury suffered by the different varieties sprayed with arsenate of lead will be found in the table and are consistent throughout.



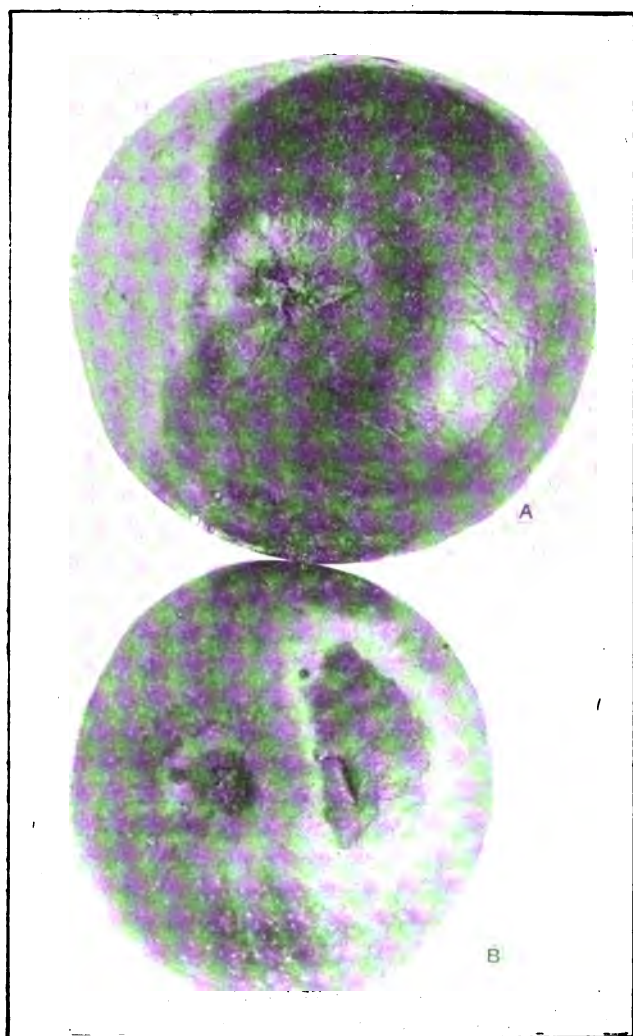
Fig. 3.- Bitter Rot of Apple at an advanced stage. Natural size.

Bitter Rot and Arsenate of Lead.—It was not expected that an insecticide such as this, would show any very decisive results in the way of checking fungus attacks on the fruit, but it was thought worth while to get percentages of injury for comparison with those obtained from apples sprayed with mixtures containing lime. The average injury from bitter rot for all trees sprayed with arsenate of lead was 29.74, which is greater than the percentage of injury to fruit from trees sprayed with either lime and Paris green or with Bordeaux mixture. It would seem from this result that the lime in the two mixtures just named had a fungicide value, while the arsenate of lead has little or none. It would be unsafe to adopt this conclusion, however, without having first tested trees side by side with others not sprayed at all. If the arsenate of lead has a value in checking rot, it must be through its destruction of gnawing insects which may be supposed to inoculate the fruit with the rot fungus.

Brown Rot and Arsenate of Lead.—This rot was not prevalent on any of the trees, and has not been at all common during the two years I have been visiting the orchard. It is more common about Lexington, where it displaces bitter rot.

The table will show the extent of the injury. The results from the different trees are so uneven as not to permit a conclusion as to the benefit of spraying in any case.

Scab and Arsenate of Lead.—This disease was more prevalent than usual, and was extremely common on the Rome Beauty. The arsenate of lead seems not to have affected it. The average per cent. of injury to fruit sprayed with the arsenate was 77.56. Both the other preparations give a lower average of injury (Paris green and lime, 51.40%, and Bordeaux mixture, 56.74.%) It appears from this that the mixtures containing lime again showed their superiority for destroying fungi. Yet I am not satisfied that this is more than an accident. When the trees sprayed with arsenate of lead when in full bloom are compared with those sprayed with Bordeaux mixture, it is found that the latter were a little more injured by scab. When all the trees sprayed after the petals fell are compared, the percentages are very close, the arsenate of lead giving 55; the Paris green and lime giving 54, and the Bordeaux mixture giving 56. It appears that the Bordeaux mixture had



**Fig. 4.—A. Brown Rot of Apple:
B. Sun Scald. Natural Size.**

least effect, and since it is the only one with a recognized fungicide value, it is to be supposed that the scab was little affected by any of the three, owing to the frequent rains which occurred during the early part of the season.

Results with Paris Green and Lime.

Codling Moth and Paris Green.—The six trees (3 Ben Davis and 3 Rome Beauty) sprayed with this mixture, while in full bloom, gave 17.5% injury from codling moth as against 10.17% injury from the trees sprayed after the petals fell. This result agrees in general with that obtained by spraying with arsenate of lead, though the injury suffered was greater on the trees treated with Paris green.

Results with Bordeaux Mixture.

The greater part of the orchard was sprayed by Mr. Scheible as he has been accustomed to spray it, excepting that the mixture was this year applied after the petals had fallen, whereas his custom is to spray the trees when in full bloom. This year the inclement weather delayed the work, so that his men were longer in getting over the orchard, and I think the unsatisfactory results secured were partly due to this. When inspecting the fruit at the end of the season, the apples from three Ben Davis and three Rome Beauty trees that had been sprayed with Bordeaux mixture were examined with the others. A glance at the table will show that they were not much helped by the mixture as compared with the arsenate of lead and Paris green. Bordeaux mixture should at least have checked the fungus troubles more than the other mixtures, but it appears not to have done so in this case.

Codling Moth and Bordeaux Mixture.—This is commonly regarded as a good mixture for the insect when the Paris green is added, as was true in this case. The average per cent. of injury was 20.31, which is greater than in the lots sprayed after the petals fell with either arsenate of lead or Paris green and lime, the former averaging 1.67, and the latter, 10.17%. The Bordeaux mixture and Paris green have thus not shown up so well compared with the other mixture.

Bitter Rot and Bordeaux Mixture.—This rot did not attack the

Rome Beauty, hence, only the three Ben Davis are available for comparison with the others, with (17.11%) injury it stands a little ahead of both Paris green and lime, (21.31%) and arsenate of lead, (38.18%), when applied after the petals had fallen. But all the trees sprayed with Paris green and lime average a trifle lower (16.07%) in bitter rot injury, while the average injury from all the trees sprayed with arsenate of lead still remains higher (29.74%). The preparations containing lime thus appear to have a slight advantage in the matter of bitter rot injury, but it is hardly marked enough to warrant any positive conclusions as to the relative benefit from the Bordeaux mixture.

Scab and Bordeaux Mixture.—The results with Bordeaux mixture in checking scab are also disappointing. The Bordeaux mixture gives an average for the culls of 56.74% of injury. The Paris green and lime gives 54.88%. The arsenate of lead gives 55.15%. The high average was due to the Rome Beauty largely, nearly all the culls of this variety being affected. The injury suffered by the Ben Davis and York Imperial in the orchard was not excessive. Considering the Ben Davis alone and the trees sprayed after the petals fell, both arsenate of lead and Paris green and lime gave better results than the Bordeaux mixture and Paris green. The arsenate of lead gave 10.30%; the Paris green and lime, 10.15%; the Bordeaux mixture gave 15.50%. Such differences might easily be due to individual differences in the trees, some generally being worse injured than others. At any rate they are not sufficiently pronounced to warrant one in attaching much importance to them.

Injury to the Fruit from Bordeaux Mixture.—Writers on fruit growing frequently refer to an injury to apples supposed to be caused by Bordeaux mixture, and believed to be encouraged by weather conditions at the time of spraying or to the mixture being wrongly made. I have never until 1906 observed anything of this sort worthy of special notice, though at one time while spraying Ben Davis on the Experiment Farm some deformities were observed that were suspected of being caused by this mixture. In Mr. Scheible's orchard, the Ben Davis were everywhere russeted and often misshapen, though nothing of the sort was observed in 1906, when the same trees were sprayed with the mixture. York Imperial sprayed with the same mixture in 1907 were clean-skinned and not distorted.

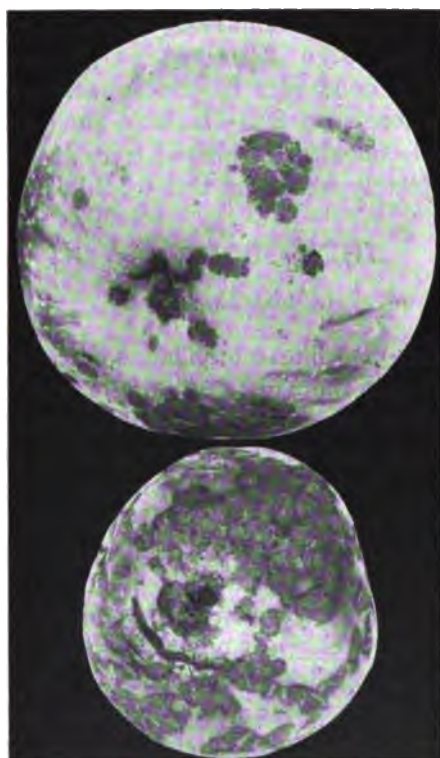


Fig. 6.—Apple Scab. Natural Size.

The Rome Beauty also escaped this russetting and distortion without regard to the spray mixture used. Ben Davis, on the contrary, were rusty and distorted on all trees whether sprayed with Bordeaux mixture or the other mixtures. It seems to me from these facts that the trouble is peculiar to the Ben Davis and may be the result of the freezing in April, when, as already noted, the young apples and blossoms adhered in clumps and appeared to be ruined by the cold. The distortion and rusty skin of the fruit is, however, precisely what has been described as Bordeaux injury. The figures will give a good idea of the appearance of the fruit. I have never anywhere seen Ben Davis in such unsatisfactory condition. As already noted, the sprayed trees in 1906, were bending with apples completely free from this trouble.

THE CODLING MOTH.

(*Cydia pomonella*).

A small pinkish or white caterpillar, sometimes called the apple worm, which eats into the fruit, beginning at the "eye" and mining out the interior about the core. The adult is a small moth.

Few insects have had more said about them than this one. It probably occasions more loss to apple growers than any other two insects. Originally brought to this country, it was long ago distributed throughout the apple growing states where it has been known more than a hundred years.

The adult is a small brown moth, not often seen, belonging to the same family (Tortricidæ) as numerous other species which roll, fold, and skeletonize the leaves of plants. The fore wings, as is common in the family, appear rather squarely cut off at the ends and measure from tip to tip about three-fourths of an inch; they are marked with cross-lines of grey and brown, and at the outer extremity is a dark brownish-black area, marked in turn with bronzy or brassy spots.

The moths appear about the trees when these are blossoming or a little later and place their minute eggs singly as soon as the fruit sets. The well known apple worms hatch from these eggs and gnaw their way into the heart of the apple, often utterly destroying and causing them to fall to the ground when small, but sometimes leaving no outward evidence of their presence

except the mass of dejecta which they cast out of their burrows. When fully grown the larvæ leave the apples, generally going out of the side, and pupate in the silken cocoons under loose bark near the base of the trunk of the tree, or else under loose rubbish on the ground beneath. More than one brood develops at this latitude during a season.

The insect is so well known as not to call for further description. We have no other insect attacking the fruit in precisely the same manner. The plum curculio sometimes gouges the skin and causes fruit to become knotty and distorted. This it is likely to do only when plum trees grow near apple, and as plums are not very much grown in Kentucky, the injury is not of much consequence. Still another curculio known as the Apple Curculio (*Anthonomus quadrigibbus*) occurs in the State and bores round holes in the fruit, but has never been known to do mischief sufficient to call for treatment. It is a native insect, originally attacking the native hawthorn and crab apple fruit.

Remedial Treatment.

The treatment for codling moth injury very generally adopted after much experiment is spraying the trees with Paris green or arsenate of lead mixtures immediately after the petals fall from the blossoms, so as to destroy the young worms as soon as hatched and before they reach the interior of the fruit. The experiments made by this Division in Hardin County in the spring of 1907, indicate that nothing is to be gained by spraying before the petals fall, while experiments made by others have shown that the tender stigma of the blossom is likely to be damaged by sprays so as to prevent the setting of the fruit entirely. Both show, however, that spraying to be effective must be done immediately after the blossoms fall. If delayed the larvæ get down into the fruit where no spraying will reach them.

From my own tests I am disposed to recommend strong mixtures of arsenate of lead in preference to Paris green mixtures, though I know from previous experimentation that the latter can be made to do very effective work.

We used last spring a mixture of arsenate of lead containing five pounds in fifty gallons of water, and found it very effective.

A somewhat weaker mixture, say three pounds in fifty gallons of

water, will probably do just as well, and where large orchards are to be sprayed is preferable on the score of economy. Yet it must be remembered that arsenate of lead is not effective when employed in water in the same proportions as Paris green. A mixture of the latter poison in the proportion of one pound in 150 gallons of water is about all the foliage will endure, because the poison in Paris green is slightly soluble and stronger mixtures are likely to burn the foliage. To prevent burning when using Paris green, a few pounds of lime are commonly added.

The precise procedure in spraying an orchard depends somewhat on what pests are present in it. If only codling moth is troublesome, the early spraying with arsenate of lead or Paris green, with an additional application of the same mixture in a week or ten days after the first, will commonly be all that the trees need. It will serve also for most of the other early-appearing, leaf-gnawing insects, such as the canker worm and apple-leaf measuring worm. But if bitter rot, brown rot, or scab, is prevalent, it is advisable to use the arsenate of lead or Paris green in Bordeaux mixture, and more than two sprayings may be required, since the rots often appear after the apples are well grown.

Observations on the Life-History.

The importance of knowing the time limits of the broods and stages for Kentucky was impressed upon me in 1893, while engaged in work with apple pests on the Experiment Farm, and it was determined then when opportunity offered to devote to the question time necessary to determine these points. Incidentally facts throwing light on the subject have been acquired from time to time, and in 1903, an assistant was charged with following the life-history as continuously as other duties permitted.

From records and specimens gathered then and at other times, the following statements may be made, leaving a full discussion of them to a later publication.

The stages have been collected at the following dates:

Adults.—Feb. 24 (in-doors); May 10, 11; April 2, 20; June 7, 11, 26; July, 11, 13, 15, 16, 18, 20, 21, 22, 24, 27, 28; August 4, 13, 26 (in-doors).

Egg.—July 28 (in-doors).

Larvæ.—June 26, 27, 28, 29,; July 1, 2, 3, 7, 8, 9, 17, 23,; August 3, 8, 20, 25; September 7, 9, 16, 17, 18; October 28.

Pupæ.—June 25; July 3, 7, 9, 23; August—8, 20; September 16, 18.

The moths of the winter brood are evidently represented by the earlier dates, Feb. 24, May 10, 11, and April 2, 20. The first was taken in-doors and was perhaps an accelerated individual. These moths that mature in warm places where apples have been stored over winter undoubtedly make their way to the trees in many cases. They are generally found upon windows endeavoring to escape. The April and May dates represent the normal period of the moths about the trees in spring.

While close attention has not been given to the species in the early part of the season beyond noting the effect of spraying and while, therefore, our records lack completeness for this period, they may be accepted as showing the periods of greatest activity and abundance of the moth for the State. If the adults were common during May our collections and records would surely show it. Few records of the adults have been made by us for May, but in June adults have been collected at dates indicating its presence in orchards throughout the month. These moths are in all probability of the summer brood, the adults of which become common in July and continue, by our records, until the middle of August. One example obtained in the vivarium August 26, represents a retarded individual.

The egg of these summer moths is laid during July in the main, and was secured from confined examples in one instance.

In June from the twenty-fifth to the thirtieth, numerous larvæ have been collected, a large proportion nearly ready to pupate, but with them some very young. A lot of forty-nine preserved at this time gives the following percentages.

About grown, 42.85; two-thirds grown, 12.22; one-half grown, 42.85; one-fourth grown, 2.04.

Larvæ come from the trees in large numbers in early July for pupation. Some have pupated by July 3 and in 1903, on July 23, from bands about apple trees, twenty-seven pupæ were taken, thirty-eight larvæ, and six empty pupa cases, showing that some moths had emerged. On August 8, 1903, from the same bands, twenty-three larvæ were taken, and five pupæ, while on August

20, ninety-nine larvæ were taken from the bands, with one pupa and ten empty pupa cases. September 17, fifty-seven larvæ were taken and one pupa-case. About August 20, therefore, may be regarded as the time when the pupal period of the summer brood ceases. The large numbers of larvæ obtained on this date pertain to the winter brood, and later were observed preparing the silken cases in which they hibernate.

When the larvæ descend from the trees in mid-summer, they remain without pupating for some time, from six to twelve days in our experience, and remain in the pupa stage from four to fourteen days, with an average of about seven and a half days. Some records made by Mr. E. P. Taylor in 1903, while assistant in the Division, will illustrate the point. The larvæ were collected from under bands placed about apple trees for the purpose of attracting them.

1. From band, June 25; pupated July 7; adult July 11.
2. From band, June 25; pupated July 7; adult July 12.
3. From band, June 26; pupated July 7; adult July 13.
4. From band, June 27; pupated July 7; adult July 13.
5. From band, July 1; pupated July 7; adult July 16.
6. From band, July 7; pupated July 7; adult July 27.

It is just possible that at times three broods develop. At Lexington, October 28, 1889, I found a half grown larva in an apple taken from a tree.

Lantern Traps For Codling Moth.

Traps have been so persistently advocated and advertised by people interested in their manufacture that many good fruit growers have become convinced of their value as a means of lessening codling moth injuries. But to any one who has had much experience as an entomologist, it seems at once very improbable that the moths will be attracted in numbers sufficient to justify the expense and time required to catch them by such means. I have seen in use such traps, consisting of a tin can with simple exposed wick, and tin reflector, placed over a bucket of water with oil on the surface, and can testify that they will at times draw and destroy many insects. But when these insects were examined, it was impossible to say that codling moths had been captured at all because of the condition in which the oil and water left the insects, and it was

plain from the size and other characters determinable that more than 99 per cent. of the insects were certainly not codling moths. Some of these traps were tried by myself, finally, on my own place, and on the College Campus, without getting results that were at all satisfactory. It was finally decided to use a trap that would capture the insects without injuring them, and an ordinary 16-candle incandescent electric lamp was suspended at one end of the Vivarium, and under the lamp was placed a trap made after a description published some years ago by Professor C. P. Gillette, of Colorado. This worked much better and attracted at times large numbers of insects. About one hundred feet away were large apple trees, and the conditions seemed in every way good to test the question as to whether a light could be depended upon to capture the adult codling moth. Large numbers of moths, beetles and bugs (Leaf-hoppers—Jassidæ—were especially numerous) were captured from July 15 to September 1, but on only three occasions (July 20, 21-22, and 24) were codling moth captured, in all but five specimens. It is to be remembered that this was a much better light and lantern than would be available for the fruit grower, and if under such favorable conditions so few moths were captured, it is reasonable to suppose that very few indeed would be attracted by the imperfect traps generally employed. The following records were made by Mr. E. P. Taylor, the assistant in charge of the trap.

	Codling Moth.	Other Moths.	Other Insects
July 15 -----	None	115	38
July 16 -----	None	4	11
July 20 -----	1	90	33
July 21-22 -----	3	366	212
July 24 -----	1	215	399
Aug. 6 -----	None	10	16
Aug. 8 -----	None	20	73
Aug. 20 -----	None	269	48
Aug. 22 -----	None	123	95
Aug. 31 -----	None	620	39
Sep. 1 -----	None	184	43
Totals -----	5	2016	1007

In other words, about two-tenths (0.16 per cent more exactly) of one per cent. of all insects captured were codling moth, during a period when the adult codling moths of the summer brood were most numerous, as shown by reared specimens and by examples captured by other means.

The experiment proved simply that the moth is at times attracted in very small numbers to light, a fact that has been verified by the occasional capture of specimens about lamps indoors.

Codling Moth Attacking Peaches.

An interesting fact in the habits of the insect was observed on the Experiment Farm, August 25, 1893, when the fruit of some peach trees grown in the midst of a small orchard was found to be injured by codling moth. The apple crop was very light, and the moths were probably driven to the peaches by the scarcity of their natural food.

Under similar circumstances, I have known peaches to be badly injured in some neighborhoods by the plum curculio, which seems more natural, since both plum and peach are stone fruits.

FORMULAE FOR INSECTICIDES AND FUNGICIDES FOR USE IN AN APPLE ORCHARD.

Arsenate of Lead.—Two to five pounds in 50 gallons of water, or in this quantity of Bordeaux mixture. Useful for codling moth and for other insects which gnaw the leaves.

Paris Green.—One pound in 150 gallons of water, with three pounds of lime added, or use the same weight of Paris green in 150 gallons of Bordeaux mixture, when of course the lime in the latter is sufficient without the additional three pounds. Useful for codling moth and for other gnawing insects.

Bordeaux Mixture.—Four pounds bluestone; four pounds of lime; and fifty gallons of water. Useful for bitter rot, brown rot, scab leaf spot and other fungus troubles.

Dissolve the bluestone in four or five gallons of boiling hot water, then pour in barrel and add clean water to make twenty-five gallons. Slake the four pounds of lime with a little water

poured over it from time to time, then add enough water to make a milk of lime about as thick as cream, now strain through wire gauze to remove coarse particles and add enough water in a barrel to make twenty-five gallons of lime-water. Finally pour the two preparations, lime and bluestone, into a third barrel, a bucket of each at the same time so as to mix thoroughly and evenly.

If large quantities are to be used, it is well to have a number of barrels, and the bluestone may be suspended in the water in a sack to dissolve, but even so it will require some hours to dissolve it, and it is well to prepare the solution and make the lime water some time before the spraying is to be done, pouring them together and mixing just before spraying.

Improperly made mixtures can be recognized by the rapid settling of the solid matter. When made according to the directions given above, the solid matter will remain suspended for hours. A bright knife blade thrust into Bordeaux mixture that does not contain enough lime becomes coated with the free copper, and more lime should be added until there is no such deposit.

It is highly important that the mixture be properly made.

Bordeaux Dust.—This has been recommended, and several prepared dusts are advertised for sale. Tested side by side with liquid Bordeaux mixtures they have failed completely. In Oregon recently a large number of trees dusted for scab gave only thirteen per cent. in clean-skinned fruit, while the liquid Bordeaux gave eighty-nine per cent. Unsprayed trees gave six per cent.

Lime-sulphur-salt Wash.—Lime, 20 pounds; sulphur, 14 pounds; salt, 10 pounds; water, 40 gallons.

Slake the lime in a large iron kettle, adding the sulphur slowly and stirring at the same time; add about twenty gallons of water and boil for an hour, then add the salt and boil twenty minutes longer. Strain through burlap and add enough hot water to make forty gallons. Apply while hot.

It is slightly acrid to the skin, and it is advisable to keep it from the hands and face as largely as possible. The pump should be made of iron, or brass, and ought to be washed out thoroughly before putting away.

Good results have been secured without the salt.

This wash is perhaps the best preparation known for winter use against scale insects. It destroys foliage, and hence cannot be used in summer.

Coal Oil Emulsion.—One half pound of soap (whale oil preferred); 1 gallon of water; 2 gallons of coal oil.

Dissolve soap in boiling hot water, then while hot add to coal oil and pass rapidly through a force pump for ten minutes, until oil, soap and water unite in a thick cream. For use, add one part to nine of water.

Thus made, it will not hurt most foliage if applied as a genuine spray. It is a summer substitute for the lime-sulphur-salt wash.

HOW TO PLANT AND CARE FOR AN ORCHARD.

By M. F. Johnson, President State Horticultural Society, Buechel, Ky.

An apple orchard will do fairly well on almost any soil except boggy or sour soil. A well-drained elevation is desirable, and the soil should be reasonably fertile. So far as exposure is concerned, some like a northern exposure because the bloom is not so early and may escape the late frosts, but on the other hand the south-eastern exposure is conducive to fine color, which is a quality much desired, especially in a market orchard. Judgment must be exercised in the selection of varieties, always bearing in mind that different conditions of soil and climate have much to do with the success of different varieties. There are varieties that are best suited to the far North and others suited to the far South, and neither of them so well suited to Kentucky. For this reason it is best to buy trees from nurseries near home, as such nurserymen will surely give the buyer the benefit of their experience in such matters. Moreover, mistakes would more easily be corrected should any occur. If those who buy trees for Kentucky would buy from Kentucky nurseries, the money so spent would be kept in Kentucky and our home nurseries would be encouraged to go into the business upon a more extensive scale. But, above all things, buy from an honest and intelligent man. Patronize no other. Plant only young and healthy trees, for you are laying the foundation of your orchard. Never plant an orchard on an old, worn out, poverty stricken place, where nothing else will grow, unless you can figure out why a tree should be expected to grow where all things else have failed. When ready to plant, dig spacious holes at least two feet square and eighteen inches deep. Fill the bottom of the hole with rich loamy soil and be sure to put none except finely pulverized and rich soil about the roots for the reason that the little rootlets

must have the soil in such complete state of pulverization as to free the chemical properties therein and make them immediately available for them to feed upon. Plant a tree about an inch deeper than it grew in the nursery. Never plant when the ground is wet. Before planting, cut off all broken and bruised roots and reduce the top at least as much as the roots have been, and, indeed, it is best to reduce it more. Watch over your young orchard as you would your children. It needs such attention. It will need training; yea, sometimes correction, and, like the children, this should be attended to while young. Start the young tree with the right kind of a head, head it low so that the branches will protect the trunk from the hot summer sun, also that it may so shade the ground so as to conserve the moisture around the roots and again so that the winds will not have such a leverage upon it to uproot it, and again so that when it shall come into bearing that the fruit may be more easily gathered and the damage may not be so great to any fruit that may fall to the ground. Allow no equal forks; they will split down when larger grown. I would prefer to go to the nursery early in the fall and select my trees and get the very best, even if I had to pay more money. But I would not plant them out until spring, but would heel them out. By doing that I would avoid having them all blown out of position by the winter winds and perhaps save them from the rabbits. Young trees should be mulched in order to retain moisture until they become well established. The young orchard may be cultivated to some crop provided the land is sufficiently strong. Otherwise the land should be sown to some such crop as stock peas or soja beans or clover and the crop turned under in order to improve the soil and induce the expansion of the root system. Always carry a sharp knife and whenever a superfluous limb is seen growing, cut it off while it is small, regardless of the time of year, but, later, if large branches must be taken off, let that be done in the fall or early spring. An orchard when it has reached the age for fruiting can be over-pruned or the soil may be made too rich, either of which conditions may tend to an excess of wood growth to the detriment of fruit buds. If the tree is too strong in wood growth suspend cultivation and do only such pruning as is necessary to admit the sunlight and the free passage of air. An apple orchard, when no fillers are to be used, should be planted with the trees from 32 to 36 feet apart,

but if peach or other trees are to be planted between the apple trees, then they should be 40x40 feet. High, well drained lands are best adapted for peach orchards. Cherries do not demand much cultivation; neither do pear trees, and plum trees seem to do best where the ground is compacted but free from trash and refuse matter. Plums usually do well in hog lots. In conclusion, let me emphasize the fact that if valuable returns are expected, there must be intelligent and faithful care taken of the trees. In order to succeed with the orchard the owner must be in love with the orchard. Don't waste money on fruit trees unless they are to be cared for after planting them.

INSECT AND OTHER ENEMIES IN THE ORCHARD.

By M. F. Johnson, President State Horticultural Society, Buechel, Ky.

In no field of industry is the old adage, "No success without labor," more true than in the orchard. As the years go by, the already long list of insect enemies to the field garden and orchard is added to by importation from foreign countries. But for every one of these pests the superior intelligence of man has found a remedy, or will discover one. As there are ailments peculiar to every organ of the human body, so is every part of the tree the victim of attack from some enemy. I will only mention some of those most commonly found in our orchards and will begin at the root of the tree and go up. The most common enemy attacking the root is the woolly aphid, or root louse. Nursery stock is often infested with this pest, and all such stock should be rejected. It is a very small insect and lives in colonies, and it is easily identified by its bluish cottony appearance. The roots infested assume a rough, warty appearance and become brittle and unnatural in growth. When the tree becomes infested with these, perhaps the best remedy is to dig a trench around it and put a liberal quantity of ground tobacco stems in the trench and cover up again at once. This will prove an insecticide and at the same time a fertilizer. The borer, both round and flat head, infests the crown and trunk, and the best thing for them is to go after them with a long, slim knife blade and if they are out of reach prod them to death with a wire. The shot-hole borers usually do most of their work on the larger branches and upper trunk and are so called because where they

attack the tree has the appearance of having been shot. Sapsuckers, checkerbacks and woodpeckers are often found on such trees and are wrongfully accused of making the holes, and when so found are often shot and killed. The poor birds simply die in the discharge of their duty. They are insectivorous birds and their instinct teaches them that insects are there and they are simply after the insect. When trees or branches are badly infested with this borer it is best to cut and burn. I might mention also the rabbit as an enemy to the trunks of young trees. By tying cornstalks or thin boards or tar paper or even newspaper around the young trees they may be protected from rabbits. A strong wash of diluted soft soap with a strong red pepper tea added will deter the rabbit and at the same time serve as a pretty good insecticide and will give to the bark of the tree a healthfulness that perhaps nothing else would do. The tent caterpillar is one of the common enemies of the orchard. There are many ways of combatting them. Whenever in reach take the hand and tear the tent out and destroy them, when on a small limb cut the limb off and burn them. When out of reach make a torch on a long pole and burn them out. Never wait for them to be grown before attempting to destroy them. By carefully looking over the trees in early spring, the eggs may be found from which they are hatched. They are placed in a broad girdle around the twig and then covered with a gummy coat by the female during the summer. When finished it looks like an enlargement of the twig. Perhaps the insects that are destroying more trees than all others are the various scales, chief of which is that known as the San Jose scale, and in dealing with it we must learn not to despise the day of small things, for it is indeed a small thing when considered singly; so small that it is not visible to the ordinary eye, yet it multiplies with such astonishing rapidity that it is not long in completely covering the entire branch and, in fact, the entire tree, and its appearance is first manifested by the tree presenting a somewhat grayish appearance, as if it were covered with ashes. This little fellow cannot be reached with the poisonous spray, from the fact that he is not a biting, but a sucking insect, and when born immediately strikes his little beak into the bark and with his millions of little companions goes to pumping the life out of the tree. So as we cannot get to his stomach we must kill him by contact, and for this purpose we will use what is known as the salt, sulphur and lime spray, which consists of about 15

pounds each of salt, sulphur and lime to 50 gallons of water. It is claimed by many now that the salt adds nothing to the value of this spray. Indeed, some of the best authorities claim 15 pounds sulphur and 20 pounds lime to 50 gallons of water is the best formula with which to combat the scales. This spray should be applied late in the fall and early in the spring before the buds are much swollen. This has been proven to be an effective exterminator of scale. The codling moth has been the worst enemy to the fruit. The moth deposits its egg early in the spring, and the lava is hatched about the time the little apples are forming and eat their way into the blossom end of the apples. As these are biting insects they may be destroyed by poison. Use the Bordeaux Mixture, which is made of 6 pounds bluestone and 4 pounds unslacked lime to 50 gallons of water, and to this add one-quarter pound, Paris green. Spray with the above as soon as the blossoms fall and again in ten days and still again in ten days. The scab is another evil which befalls the orchard, especially on flat wet land which should be underdrained, and also where trees are too much crowded, in which case the trees should be thinned out so as to admit of more air and sunshine. The trees should be sprayed as for codling moth. Apple tree twig blight should be cut below the affected part and burned. Apple leaf rust should be treated with Bordeaux Mixture. Cedar trees seem to be productive of rust. Don't allow them to grow near the orchard. Pear blight should be treated as apple twig blight. Care should always be taken to cut below the affected part and burn all twigs. It is impossible in this paper to mention other pests, but advise that those interested write the experiment station at Lexington for bulletins on this subject that will treat of them more thoroughly.

BULLETIN No. 130. Kentucky Experiment Station.

1. The Food of the Crow Blackbird.

By, H. Garman, Entomologist and Botanist, Kentucky Experiment Station.



**Fig. 1. - The Crow Blackbird or Purple Grackle (*Quiscalus quiscula*).
From Division of Biological Survey, U. S. Dep. Agr.**

While not more common than several other birds in Kentucky, the Crow Blackbird from its habit of assembling in large flocks is one of the most conspicuous and generally known of the birds occurring in the State. It spends much of the time from March or late February, when it appears here, until November, when com-

monly it retires a little farther south, in flocks, which forage in the fields and gather each night with others, forming immense assemblages, to roost in evergreens about farm houses or at the edges of cities. The period during which this flocking habit is suspended comes in May and June. During the latter month, the birds become so shy that it is difficult to get specimens, though at most other times they may be secured in large quantities. It has come to be a custom for gunners about Lexington to lie in wait for the birds as they approach their roosts in the evening and shoot them for food. Thousands are thus disposed of, yet the birds persist in gathering year after year at the same places, and thus seem destined to final destruction.

One of the largest gatherings in the suburbs of Lexington is in a clump of evergreens on the premises of Judge James Mulligan. From this roost each morning during the flocking period go out thousands of birds, and as regularly each evening they return and after making for a time a tremendous clatter settle down among the evergreens. Most or all of the birds roosting here fly southward to forage during the day. In going to and from the roost, many pass over the Station building, and their constant movement to and fro has for several years impressed me with the important part they play in the agriculture of the surrounding country. If, as I have been led to suppose, they are largely graminivorous and feed upon crops in the fields, they may be a very great burden to the farmers of this and adjoining counties. If, on the contrary, they are in any degree insectivorous and their vegetable food is waste grain and seeds, they must from their great numbers and long sojourn with us each year be effective agents for the suppression of insect pests.

Our game law enacted in 1902 forbids the killing of all "song birds" except when engaged in destroying crops, but permits at all times the shooting of English sparrows, crows, Crow Blackbird and some others, the assumption being that these birds are in the main destructive and not worthy of preservation. I have had no doubt about the evil character of the English sparrow. Its perniciousness in fouling the roofs and gutters of buildings from which rain water is collected, by which it becomes a serious menace to health, would warrant its destruction if it were otherwise beneficial. But here in Bluegrass Kentucky it is, besides, exceedingly destructive to ripening wheat, continuing its attacks on this grain after it

is in the shock with a pertinacity that even constant watching with a shotgun in hand does not daunt. Whole crops near cities would undoubtedly be completely devoured by it, if no measures were taken to prevent. About the crow I have felt more doubt, but the testimony of good farmers and careful observers well known to me is mostly against it, and perhaps the law decreeing its destruction is a just one.

My chief doubt has been about the assumed mischievousness of the Crow Blackbird. I was willing to believe it as destructive to grain as had been claimed, in sections of the country with which I was not familiar; but observation made here both by myself and by farmers tended to give it a good character, and it was with the idea of getting a more reliable foundation for judgment with special reference to this locality that it was decided in the fall of 1905 to have examples collected each month for a year and make a study of the stomach contents. This was done, beginning in November, 1905, and ending in October, 1906. I should have felt some compunctions about having the bird shot even for such a purpose were it not that it seems very likely to be exterminated in a short time by gunners in Kentucky, if our law permitting its destruction is not amended.

In considering the food of a bird, it is not enough to determine merely the relative bulks of insect and vegetable food. After this is done the question confronts us as to the bulk of one constituting an equivalent for a given bulk of the other. Equal bulks of grain and insect food in stomachs do not necessarily imply that a bird is neutral in value. The grain eaten may be the more valuable of the two, or the reverse may be true. Seventy-five, eighty-five, or ninety-five per cent of grain food would not show beyond question that the bird is injurious, and this is so even if all the grain were taken from crops. In short, everything depends on the character of both the vegetable and the insect food. If the grain eaten has no value to the farmer, the bird should be acquitted of wrong doing at once, even though it eats very little insect food or none at all. If some portion of the grain has a value, the question as to the usefulness or injuriousness becomes more difficult, for it is essential before a perfectly satisfactory conclusion can be reached, to know what proportion of the vegetable food is of value and what ratio this value bears to the value of the insect food.

These ratios are of such character that they can only be determined finally, if at all, by the joint work of the botanist and entomologist, and it is not with any thought of rendering judgment as to the value of this bird for the whole country that I am publishing the data given below, but rather to reopen the question for Kentucky and claim for the Crow Blackbird more careful consideration than it has received; for I am well satisfied that it has not in this State received exact justice at our hands, and that its case is at the least entitled to a rehearing.

The seeds eaten by the Crow Blackbird are generally of a rather large size. It does not feed at all largely on weed seeds, and indeed does not eat a great variety of seeds of any sort. Probably it did so before the period of extensive grain fields. At present it shows a special fondness for four or five seeds the rest being eaten only occasionally and seemingly when chanced upon. Corn among grains is the chief food. It is eaten from spring to fall whenever it can be found. Yet I never saw a complete grain in a stomach, every one having been broken into bits either by the stout beak of the bird or by some other agency before it was eaten. Wheat is next to corn as an element of the food, and here again the grain is always broken, as is rye, which is sometimes found in stomachs. Other smaller seeds are often devoured whole, and are then easily determined. Among these hemp and sorghum seed are frequent. The only weed which appears to be more than an accidental element is pigeon grass (*Chaetochloa glauca*) which was several times found among the food. There is nothing in the food as seen in the stomach to demonstrate that any of it was taken from growing crops or from shocks of grain, and from observation of the birds while feeding, I am sure that much of it was picked up in the fields and by roadsides, for the bird is, so far as its grain diet is concerned, a gleaner rather than a marauder.

Any one familiar with insects would know at once from examining the contents of stomachs of this blackbird that it fed chiefly or wholly while on the ground. The remains of sod-infesting insects are frequent among the food. But unfortunately the insects eaten are broken up into fragments so small that it is generally very difficult to do more than determine the orders or families to which they belong. This makes a satisfactory estimate of the value of the insect food more difficult than it is with many other birds. But by

is in the shock with a pertinacity that even constant watching with a shotgun in hand does not daunt. Whole crops near cities would undoubtedly be completely devoured by it, if no measures were taken to prevent. About the crow I have felt more doubt, but the testimony of good farmers and careful observers well known to me is mostly against it, and perhaps the law decreeing its destruction is a just one.

My chief doubt has been about the assumed mischievousness of the Crow Blackbird. I was willing to believe it as destructive to grain as had been claimed, in sections of the country with which I was not familiar; but observation made here both by myself and by farmers tended to give it a good character, and it was with the idea of getting a more reliable foundation for judgment with special reference to this locality that it was decided in the fall of 1905 to have examples collected each month for a year and make a study of the stomach contents. This was done, beginning in November, 1905, and ending in October, 1906. I should have felt some compunctions about having the bird shot even for such a purpose were it not that it seems very likely to be exterminated in a short time by gunners in Kentucky, if our law permitting its destruction is not amended.

In considering the food of a bird, it is not enough to determine merely the relative bulks of insect and vegetable food. After this is done the question confronts us as to the bulk of one constituting an equivalent for a given bulk of the other. Equal bulks of grain and insect food in stomachs do not necessarily imply that a bird is neutral in value. The grain eaten may be the more valuable of the two, or the reverse may be true. Seventy-five, eighty-five, or ninety-five per cent of grain food would not show beyond question that the bird is injurious, and this is so even if all the grain were taken from crops. In short, everything depends on the character of both the vegetable and the insect food. If the grain eaten has no value to the farmer, the bird should be acquitted of wrong doing at once, even though it eats very little insect food or none at all. If some portion of the grain has a value, the question as to the usefulness or injuriousness becomes more difficult, for it is essential before a perfectly satisfactory conclusion can be reached, to know what proportion of the vegetable food is of value and what ratio this value bears to the value of the insect food.

These ratios are of such character that they can only be determined finally, if at all, by the joint work of the botanist and entomologist, and it is not with any thought of rendering judgment as to the value of this bird for the whole country that I am publishing the data given below, but rather to reopen the question for Kentucky and claim for the Crow Blackbird more careful consideration than it has received; for I am well satisfied that it has not in this State received exact justice at our hands, and that its case is at the least entitled to a rehearing.

The seeds eaten by the Crow Blackbird are generally of a rather large size. It does not feed at all largely on weed seeds, and indeed does not eat a great variety of seeds of any sort. Probably it did so before the period of extensive grain fields. At present it shows a special fondness for four or five seeds the rest being eaten only occasionally and seemingly when chanced upon. Corn among grains is the chief food. It is eaten from spring to fall whenever it can be found. Yet I never saw a complete grain in a stomach, every one having been broken into bits either by the stout beak of the bird or by some other agency before it was eaten. Wheat is next to corn as an element of the food, and here again the grain is always broken, as is rye, which is sometimes found in stomachs. Other smaller seeds are often devoured whole, and are then easily determined. Among these hemp and sorghum seed are frequent. The only weed which appears to be more than an accidental element is pigeon grass (*Chaetochloa glauca*) which was several times found among the food. There is nothing in the food as seen in the stomach to demonstrate that any of it was taken from growing crops or from shocks of grain, and from observation of the birds while feeding, I am sure that much of it was picked up in the fields and by roadsides, for the bird is, so far as its grain diet is concerned, a gleaner rather than a marauder.

Any one familiar with insects would know at once from examining the contents of stomachs of this blackbird that it fed chiefly or wholly while on the ground. The remains of sod-infesting insects are frequent among the food. But unfortunately the insects eaten are broken up into fragments so small that it is generally very difficult to do more than determine the orders or families to which they belong. This makes a satisfactory estimate of the value of the insect food more difficult than it is with many other birds. But by

is in the shock with a pertinacity that even constant watching with a shotgun in hand does not daunt. Whole crops near cities would undoubtedly be completely devoured by it, if no measures were taken to prevent. About the crow I have felt more doubt, but the testimony of good farmers and careful observers well known to me is mostly against it, and perhaps the law decreeing its destruction is a just one.

My chief doubt has been about the assumed mischievousness of the Crow Blackbird. I was willing to believe it as destructive to grain as had been claimed, in sections of the country with which I was not familiar; but observation made here both by myself and by farmers tended to give it a good character, and it was with the idea of getting a more reliable foundation for judgment with special reference to this locality that it was decided in the fall of 1905 to have examples collected each month for a year and make a study of the stomach contents. This was done, beginning in November, 1905, and ending in October, 1906. I should have felt some compunctions about having the bird shot even for such a purpose were it not that it seems very likely to be exterminated in a short time by gunners in Kentucky, if our law permitting its destruction is not amended.

In considering the food of a bird, it is not enough to determine merely the relative bulks of insect and vegetable food. After this is done the question confronts us as to the bulk of one constituting an equivalent for a given bulk of the other. Equal bulks of grain and insect food in stomachs do not necessarily imply that a bird is neutral in value. The grain eaten may be the more valuable of the two, or the reverse may be true. Seventy-five, eighty-five, or ninety-five per cent of grain food would not show beyond question that the bird is injurious, and this is so even if all the grain were taken from crops. In short, everything depends on the character of both the vegetable and the insect food. If the grain eaten has no value to the farmer, the bird should be acquitted of wrong doing at once, even though it eats very little insect food or none at all. If some portion of the grain has a value, the question as to the usefulness or injuriousness becomes more difficult, for it is essential before a perfectly satisfactory conclusion can be reached, to know what proportion of the vegetable food is of value and what ratio this value bears to the value of the insect food.

These ratios are of such character that they can only be determined finally, if at all, by the joint work of the botanist and entomologist, and it is not with any thought of rendering judgment as to the value of this bird for the whole country that I am publishing the data given below, but rather to reopen the question for Kentucky and claim for the Crow Blackbird more careful consideration than it has received; for I am well satisfied that it has not in this State received exact justice at our hands, and that its case is at the least entitled to a rehearing.

The seeds eaten by the Crow Blackbird are generally of a rather large size. It does not feed at all largely on weed seeds, and indeed does not eat a great variety of seeds of any sort. Probably it did so before the period of extensive grain fields. At present it shows a special fondness for four or five seeds the rest being eaten only occasionally and seemingly when chanced upon. Corn among grains is the chief food. It is eaten from spring to fall whenever it can be found. Yet I never saw a complete grain in a stomach, every one having been broken into bits either by the stout beak of the bird or by some other agency before it was eaten. Wheat is next to corn as an element of the food, and here again the grain is always broken, as is rye, which is sometimes found in stomachs. Other smaller seeds are often devoured whole, and are then easily determined. Among these hemp and sorghum seed are frequent. The only weed which appears to be more than an accidental element is pigeon grass (*Chaetochloa glauca*) which was several times found among the food. There is nothing in the food as seen in the stomach to demonstrate that any of it was taken from growing crops or from shocks of grain, and from observation of the birds while feeding, I am sure that much of it was picked up in the fields and by roadsides, for the bird is, so far as its grain diet is concerned, a gleaner rather than a marauder.

Any one familiar with insects would know at once from examining the contents of stomachs of this blackbird that it fed chiefly or wholly while on the ground. The remains of sod-infesting insects are frequent among the food. But unfortunately the insects eaten are broken up into fragments so small that it is generally very difficult to do more than determine the orders or families to which they belong. This makes a satisfactory estimate of the value of the insect food more difficult than it is with many other birds. But by

is in the shock with a pertinacity that even constant watching with a shotgun in hand does not daunt. Whole crops near cities would undoubtedly be completely devoured by it, if no measures were taken to prevent. About the crow I have felt more doubt, but the testimony of good farmers and careful observers well known to me is mostly against it, and perhaps the law decreeing its destruction is a just one.

My chief doubt has been about the assumed mischievousness of the Crow Blackbird. I was willing to believe it as destructive to grain as had been claimed, in sections of the country with which I was not familiar; but observation made here both by myself and by farmers tended to give it a good character, and it was with the idea of getting a more reliable foundation for judgment with special reference to this locality that it was decided in the fall of 1905 to have examples collected each month for a year and make a study of the stomach contents. This was done, beginning in November, 1905, and ending in October, 1906. I should have felt some compunctions about having the bird shot even for such a purpose were it not that it seems very likely to be exterminated in a short time by gunners in Kentucky, if our law permitting its destruction is not amended.

In considering the food of a bird, it is not enough to determine merely the relative bulks of insect and vegetable food. After this is done the question confronts us as to the bulk of one constituting an equivalent for a given bulk of the other. Equal bulks of grain and insect food in stomachs do not necessarily imply that a bird is neutral in value. The grain eaten may be the more valuable of the two, or the reverse may be true. Seventy-five, eighty-five, or ninety-five per cent of grain food would not show beyond question that the bird is injurious, and this is so even if all the grain were taken from crops. In short, everything depends on the character of both the vegetable and the insect food. If the grain eaten has no value to the farmer, the bird should be acquitted of wrong doing at once, even though it eats very little insect food or none at all. If some portion of the grain has a value, the question as to the usefulness or injuriousness becomes more difficult, for it is essential before a perfectly satisfactory conclusion can be reached, to know what proportion of the vegetable food is of value and what ratio this value bears to the value of the insect food.

These ratios are of such character that they can only be determined finally, if at all, by the joint work of the botanist and entomologist, and it is not with any thought of rendering judgment as to the value of this bird for the whole country that I am publishing the data given below, but rather to reopen the question for Kentucky and claim for the Crow Blackbird more careful consideration than it has received; for I am well satisfied that it has not in this State received exact justice at our hands, and that its case is at the least entitled to a rehearing.

The seeds eaten by the Crow Blackbird are generally of a rather large size. It does not feed at all largely on weed seeds, and indeed does not eat a great variety of seeds of any sort. Probably it did so before the period of extensive grain fields. At present it shows a special fondness for four or five seeds the rest being eaten only occasionally and seemingly when chanced upon. Corn among grains is the chief food. It is eaten from spring to fall whenever it can be found. Yet I never saw a complete grain in a stomach, every one having been broken into bits either by the stout beak of the bird or by some other agency before it was eaten. Wheat is next to corn as an element of the food, and here again the grain is always broken, as is rye, which is sometimes found in stomachs. Other smaller seeds are often devoured whole, and are then easily determined. Among these hemp and sorghum seed are frequent. The only weed which appears to be more than an accidental element is pigeon grass (*Chaetochloa glauca*) which was several times found among the food. There is nothing in the food as seen in the stomach to demonstrate that any of it was taken from growing crops or from shocks of grain, and from observation of the birds while feeding, I am sure that much of it was picked up in the fields and by roadsides, for the bird is, so far as its grain diet is concerned, a gleaner rather than a marauder.

Any one familiar with insects would know at once from examining the contents of stomachs of this blackbird that it fed chiefly or wholly while on the ground. The remains of sod-infesting insects are frequent among the food. But unfortunately the insects eaten are broken up into fragments so small that it is generally very difficult to do more than determine the orders or families to which they belong. This makes a satisfactory estimate of the value of the insect food more difficult than it is with many other birds. But by

is in the shock with a pertinacity that even constant watching with a shotgun in hand does not daunt. Whole crops near cities would undoubtedly be completely devoured by it, if no measures were taken to prevent. About the crow I have felt more doubt, but the testimony of good farmers and careful observers well known to me is mostly against it, and perhaps the law decreeing its destruction is a just one.

My chief doubt has been about the assumed mischievousness of the Crow Blackbird. I was willing to believe it as destructive to grain as had been claimed, in sections of the country with which I was not familiar; but observation made here both by myself and by farmers tended to give it a good character, and it was with the idea of getting a more reliable foundation for judgment with special reference to this locality that it was decided in the fall of 1905 to have examples collected each month for a year and make a study of the stomach contents. This was done, beginning in November, 1905, and ending in October, 1906. I should have felt some compunctions about having the bird shot even for such a purpose were it not that it seems very likely to be exterminated in a short time by gunners in Kentucky, if our law permitting its destruction is not amended.

In considering the food of a bird, it is not enough to determine merely the relative bulks of insect and vegetable food. After this is done the question confronts us as to the bulk of one constituting an equivalent for a given bulk of the other. Equal bulks of grain and insect food in stomachs do not necessarily imply that a bird is neutral in value. The grain eaten may be the more valuable of the two, or the reverse may be true. Seventy-five, eighty-five, or ninety-five per cent of grain food would not show beyond question that the bird is injurious, and this is so even if all the grain were taken from crops. In short, everything depends on the character of both the vegetable and the insect food. If the grain eaten has no value to the farmer, the bird should be acquitted of wrong doing at once, even though it eats very little insect food or none at all. If some portion of the grain has a value, the question as to the usefulness or injuriousness becomes more difficult, for it is essential before a perfectly satisfactory conclusion can be reached, to know what proportion of the vegetable food is of value and what ratio this value bears to the value of the insect food.

These ratios are of such character that they can only be determined finally, if at all, by the joint work of the botanist and entomologist, and it is not with any thought of rendering judgment as to the value of this bird for the whole country that I am publishing the data given below, but rather to reopen the question for Kentucky and claim for the Crow Blackbird more careful consideration than it has received; for I am well satisfied that it has not in this State received exact justice at our hands, and that its case is at the least entitled to a rehearing.

The seeds eaten by the Crow Blackbird are generally of a rather large size. It does not feed at all largely on weed seeds, and indeed does not eat a great variety of seeds of any sort. Probably it did so before the period of extensive grain fields. At present it shows a special fondness for four or five seeds the rest being eaten only occasionally and seemingly when chanced upon. Corn among grains is the chief food. It is eaten from spring to fall whenever it can be found. Yet I never saw a complete grain in a stomach, every one having been broken into bits either by the stout beak of the bird or by some other agency before it was eaten. Wheat is next to corn as an element of the food, and here again the grain is always broken, as is rye, which is sometimes found in stomachs. Other smaller seeds are often devoured whole, and are then easily determined. Among these hemp and sorghum seed are frequent. The only weed which appears to be more than an accidental element is pigeon grass (*Chaetochloa glauca*) which was several times found among the food. There is nothing in the food as seen in the stomach to demonstrate that any of it was taken from growing crops or from shocks of grain, and from observation of the birds while feeding, I am sure that much of it was picked up in the fields and by roadsides, for the bird is, so far as its grain diet is concerned, a gleaner rather than a marauder.

Any one familiar with insects would know at once from examining the contents of stomachs of this blackbird that it fed chiefly or wholly while on the ground. The remains of sod-infesting insects are frequent among the food. But unfortunately the insects eaten are broken up into fragments so small that it is generally very difficult to do more than determine the orders or families to which they belong. This makes a satisfactory estimate of the value of the insect food more difficult than it is with many other birds. But by

fragments of femora, elytra, and other hard parts of the body it is possible to get a good general notion of the insects eaten, and thus obtain an idea of the benefit done by the birds, so far as this element of the food will show.

The percentages given below are in each case the result of examination of the stomach contents with a magnifier or compound microscope. The nature of the vegetable food was determined generally by the starch grains, since these afforded a more reliable means of determination than small fragments, often partially digested, of the seed itself. The determinations of insect species might have been made much more frequently if I had felt that I could devote the time necessary to determine them by means of the small fragments which often afforded the only means of deciding. I have therefore determined species chiefly when the fragments were of such size that it could be done without an unreasonable sacrifice of time; and while this has reduced the number of species determinations, it leaves no doubt about those given as a foundation for judgment on the importance of the bird as an insect eater.

FOOD OF QUISCALUS QUISCULA.

April, 1906.

No. of Bird.	Per Cent of Vegetable Food.	Per Cent of Insect Food.	Date Collected.
8	99	1	April 2
9	75	25	" "
10	75	25	" "
11	33	67	" "
12	75	25	" "
13	90	10	" "
14	75	25	" "
15	trace	100	" "
16	75	25	" "
17	95	5	" "
Avs. for April 2: 69.2		30.8	

Seventeenth Biennial Report Bureau of Agriculture. 221

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
18	15	85	April 26
19	85	15	" "
20	—	100	" "
21	5	95	" "
22	70	30	" "
23	35	65	" "
24	96	4	" "
<hr/>			
Avs. for April 26: 43.71		56.29	
Avs. for month: 58.70		41.30	

May, 1906.

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
25	40	60	May 29
26	—	100	" "
27	50	50	" "
28	15	85	" "
29	5	95	" "
30	10	90	" "
31	90	10	" "
<hr/>			
Avs. for month: 30		70	

June, 1906.

No birds were secured in June. They became very scarce and shy, perhaps because moulting. But an average of the food for May and July may be supposed to approximate that for June and is given below.

Per Cent. of Vegetable Food.	Per Cent. of Insect Food.
Avs. for month: 33.84	66.16

222 *Seventeenth Biennial Report Bureau of Agriculture.*

July, 1906.

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
32	50	50	July 7
33	97	3	" "
34	40	60	" "
35	75	25	" "
36	4	96	" "
37	25	75	" "
<hr/>			
Avs. for July 7:	48.50	51.50	
38	—	100	July 24
39	10	90	" "
40	1	99	" "
41	1	99	" "
42	50	50	" "
43	80	20	" "
<hr/>			
Avs. for July 24:	23.66	76.34	
Avs. for month:	36.08	63.92	

August, 1906.

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
44	99	1	August 24-29
45	95	5	" " "
46	97	3	" " "
47	97	3	" " "
48	97	3	" " "
49	97	3	" " "
<hr/>			
Avs. for month:	97	3	

September, 1906.

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
50	95	5	Sept. 17
51	98	2	" "
52	98	2	" "
<hr/>			
Avs. for month:	97	3	

Seventeenth Biennial Report Bureau of Agriculture. 228

October, 1906.

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
53	98.5	1.5	October 4
54	80	20	" "
55	50	50	" "
56	5	95	" "
57	40	60	" "
58	98	2	" "

Avs. for Oct. 4: 61.91

38.09

59	80	20	October 24
60	60	40	" "
61	50	50	" "
62	85	15	" "
63	98	2	" "
64	97	3	" "
65	99	1	" "
66	99	1	" "
67	75	25	" "

Avs. for Oct. 24: 82.55

17.45

Avs. for month: 74.3

25.7

November, 1905.

No. of Bird.	Per Cent. of Vegetable Food.	Per Cent. of Insect Food.	Date Collected.
1	99.5	00.5	November 2
2	100	trace	" "
3	100	trace	" "
4	99.5	00.5	" "
5	99.5	00.5	" "
6	100	trace	" "

Avs. for month: 99.75

00.25

For the Whole Period. Represented (8 months.)

Per Cent of Vegetable Food.

Per Cent of Insect Food.

63.08

36.92

Including June as averaged from May and July the percentages are: Vegetable Food, 59.45; Insect Food, 40.55.

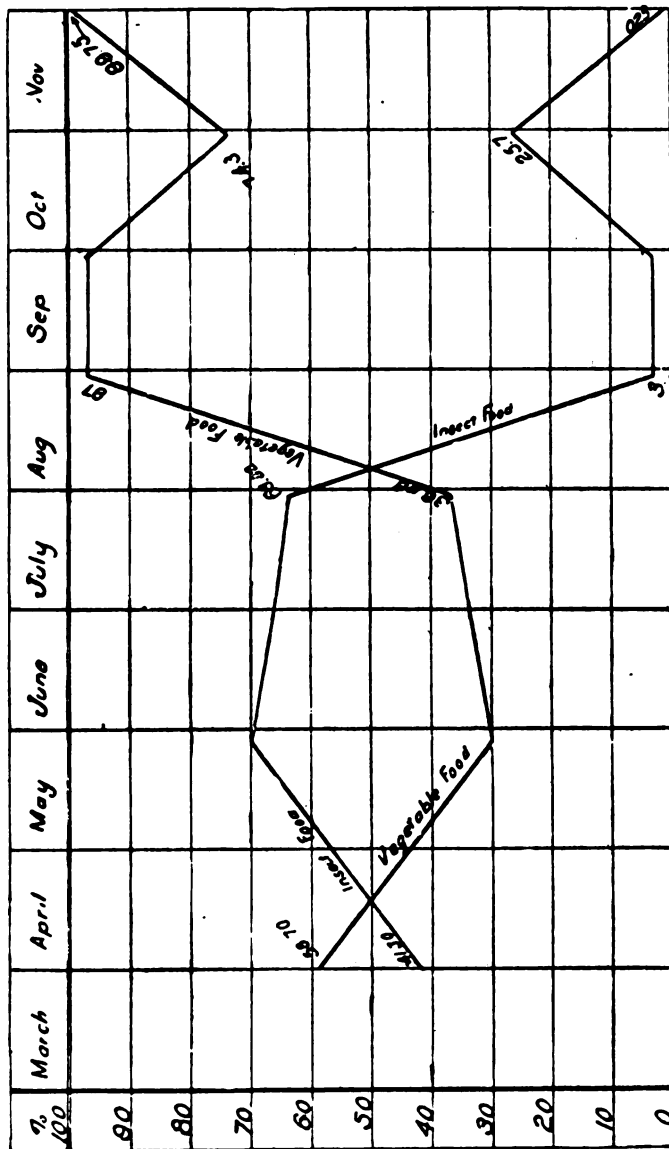


Fig. 2.—Diagram Showing the Relations of Vegetable and Insect Food of the Crow Blackbird from May to November, Inclusive.

It will be noticed from an examination of the percentages given above that there are some rather abrupt changes in the character of the food within short periods, and that it becomes almost completely vegetable during August. These changes seem in some measure influenced by the weather as well as by changing conditions of food supply. Thus in June and July the weather was very near to the average for these months in both temperature and rainfall. In August both temperature and rainfall were above the average, twenty-three days being cloudy, with thunder showers on 14 days. In September these exceptional weather conditions became even more pronounced, the mean temperature being two degrees above the average and the rainfall 2.49 inches above. Twenty-two days of this month were cloudy or partly so, while there were thunder storms on 14 days.

Insects suffer from excessive moisture, which encourages their fungus parasites. They are, too, less inclined to stir abroad in cloudy and wet weather, and it seems probable that the birds ate more grain at this time because it was the easier of the two kinds of food to find. In October the rainfall for the month fell to 0.74 inch, which is 1.41 inches below the average for the month. The temperature was close to the average. It was during the period of clear wether that the percentage of insect food rose again, while the grain food declined.

Similar change is to be observed in April when cloudy weather prevailed in the first half of the month and the last half was largely clear, the per cent. of insect food rising correspondingly from the average of 30.8 for the first 17 days to 56.29 for the remainder of the month.

The rather abrupt change in the insect food in July appeared to be due to the emergence at this time of large numbers of the common green June bug (*Allorhina nitida*). The blackbirds are very fond of them.

These variations are leveled by averaging the food for the year, and are chiefly interesting as showing how mistakes might be made as to the value of the bird from an examination of the food from birds collected only during a short period.

If all my birds had been collected during August and September, the examination of the food would appear to show the Crow Blackbird not an insect eater of great importance. If the food of the birds shot in May or July, was studied it would appear to show this blackbird decidedly insectivorous and useful.

The Average for the Whole Period.

The averages 63.08 per cent. of vegetable food and 36.92 per cent. of insect food may prove nearly right for this locality even when more material is studied, but there should, reasoning from what is known of average conditions here, be no decline in the insect food between May and July. June is of all the months the one of greatest activity and abundance of insects, and in the absence of material to study, it has seemed to me fair to consider it a period during which the proportion of insect food remained high. By doing this we get for the whole eight months 59.45 per cent. vegetable food and 40.55 per cent. of the insect food, which seem fairer averages than the others. However, this is only put forward for what it is worth, the real yearly averages so far as this study goes are those first given.

Beetles (Coleoptera) Eaten.

The most conspicuous element of the insect food of the Crow Blackbird consists of beetles. They could generally be easily recognized by fragments of wing covers when no other insect fragments were of such character as to permit of their identification. Sixty of the sixty-seven birds whose stomach contents were examined had fed upon these insects. All of those recognized belonged to one or the other of the following families: Carabidæ (ground beetles), Chrysomelidæ (plant beetles), Elateridæ (click beetles, wire worms), Scarabæidæ (June bugs), Curculionidæ and Calandridæ (snout beetles, weevils). These are just the groups of beetles represented best in corn and other grain fields.

The family Carabidae is to be regarded as generally beneficial. It contains a large number of active, black or metallic beetles, many of which hide under grain shocks, stones, boards, etc., during the day, and come out at night to feed upon other insects. They are actively predatory in the grub stage also, the young commonly living in the soil, or under rubbish. Some of the species are, however, known to feed on seeds and pollen, though the quantity of this food is probably not great and hence the injury done is not of much importance to the farmer.

The Elateridæ are injurious, the grubs being the wireworms so well known for their destruction of corn and other crops.

The Chrysomelidæ (plant beetles) contain many of our worst insects enemies, such as the potato beetle, the striped cucumber beetle, the corn root-worm, etc. *Colaspis brunnea*, determined from one of the stomachs, is a troublesome root-eating insect.

The Scarabæidæ is another family containing notable injurious species, and even including the scavengers is to be regarded as on the whole injurious. The green June bugs are favorite food of the birds. Quite frequently jaws of grubs were found in the food, of such character that it is probable they were from white grubs. In one case the jaws present represented six grubs. These soft bodied insects are so quickly digested that only such hard structures as the jaws remain to show the quantities in which they are eaten.

The snout beetles belonging to the two families Curculionidæ and Calandridæ are decidedly injurious. Both were well represented in the food, though from the bird's habit of breaking its insect food into small bits the species could not be determined, except in the case of *Sphenophorus parvulus*. Some of the fragments look very much like parts of *Sitones hispidulus* or *S. flavescens*, both known to be injurious to clover.

Considering that five of the families represented are largely or wholly injurious, while only the Carabidæ may be considered largely beneficial, it appears that the blackbird is useful in so far as its food consists of beetles.

Other Insects Eaten.

The only insects of the order Hymenoptera which had been eaten were ants, found in the stomachs of three birds. The family bears a rather bad reputation because of depredations some of its members commit in dwellings at times. It is charged also with harboring certain root-lice, the corn root louse being among them. Some of these pests are believed to be absolutely dependent on ants, which thus indirectly become noxious as enemies of corn and other plants. On the whole I think ants must be regarded as injurious and in so far as blackbirds destroy them, the birds become beneficial.

Of the true bugs the only species determined was the 17-year locust, unquestionably an injurious insect, from its attacks on the roots of the forest and fruit trees and also because of its serious local injuries to young fruit trees in orchard and nursery during locust years.

The grasshoppers and crickets representing the families Acrididæ and Gryllidæ are unquestionably injurious. *Schistocerca americana* was the only species positively identified, but some young belonging to one of the species of *Melanoplus* almost certainly represented the red-legged grasshopper.

Of caterpillars, remains were noted in two stomachs.

Eleven out of twelve families of insects recognized are injurious in the main or entirely, while the remaining family represented contains some vegetable feeding species. The Crow Blackbird is certainly beneficial, if its insect food alone be taken as a basis for judgment.

Other Animal Food Eaten

Some fragments in two stomachs were derived from thousand legs while in another stomach a single spider was noted. Both groups may be regarded as beneficial, since they feed upon insects.

Quite frequently the remains of small land snails were found in the stomachs, generally mere fragments, but in several cases large enough to permit recognition of the group to which they belong. So far as we know they are unimportant from the standpoint of the farmer. Possibly the shells were eaten like bits of brick, cinders, and gravel, sometimes noted among the food, and probably taken as an aid in digesting grain.

Vegetable Food Eaten.

The vegetable food recognized was as follows: Corn, 57 stomachs; hemp, 7; wheat, 3; sorghum, 4; rye, 1; clover seed, 1; ragweed, 1; smartweed, 1; squirrel grass (*Chaetochloa glauca*), 1.

As already stated the grain was invariably fragmentary, and bore evidence of having been obtained from the refuse left by stock and by wagons along roadsides, etc., rather than from the crops.

Not a single bird had eaten vegetable food exclusively. Those which ate most were shot November 2, and in three of them it was only after careful search with the microscope that small fragments of insects were found. They constituted no appreciable percentage of the food which would under ordinary examination have been regarded as wholly vegetable.

Birds that had eaten only insect food were collected April 26, May 29, July 24, one at each date, though some of the other birds ate so largely of insects that to ordinary inspection the food would have appeared to consist wholly of insects.

Conclusion.

It thus appears that the blackbird eats a larger proportion of vegetable than of insect food, taking the season as a whole; that the per cent. of insect food rises highest from May to July and then falls suddenly in August, while vegetable food is eaten in greater quantity from this latter month until the end of the season; that the proportion of insect food increases and the vegetable food declines whenever insects become common and easy to secure in the situations most frequented by the birds. This willingness to eat insects when they can be secured is shown by the large numbers of June bugs eaten in July, and again by the rise in the per cent. of insect food during a period of clear weather in October. We may fairly assume from these facts that the blackbird relishes its insect diet, and would in case of the insects it eats most becoming exceptionally common and destructive, increase the per cent. of its insect food correspondingly and thus serve as a check upon the insects. Considered in connection with the fact that much of the grain eaten is certainly gleaned and of no value, the insect food in the stomachs seems to show that the bird is a useful one. Further study may lead to some modification of this view, but at the present time it is my opinion that the shooting of the Crow Blackbird should not be permitted, except, as in the case of other small birds, when it is found actually engaged in destroying crops.

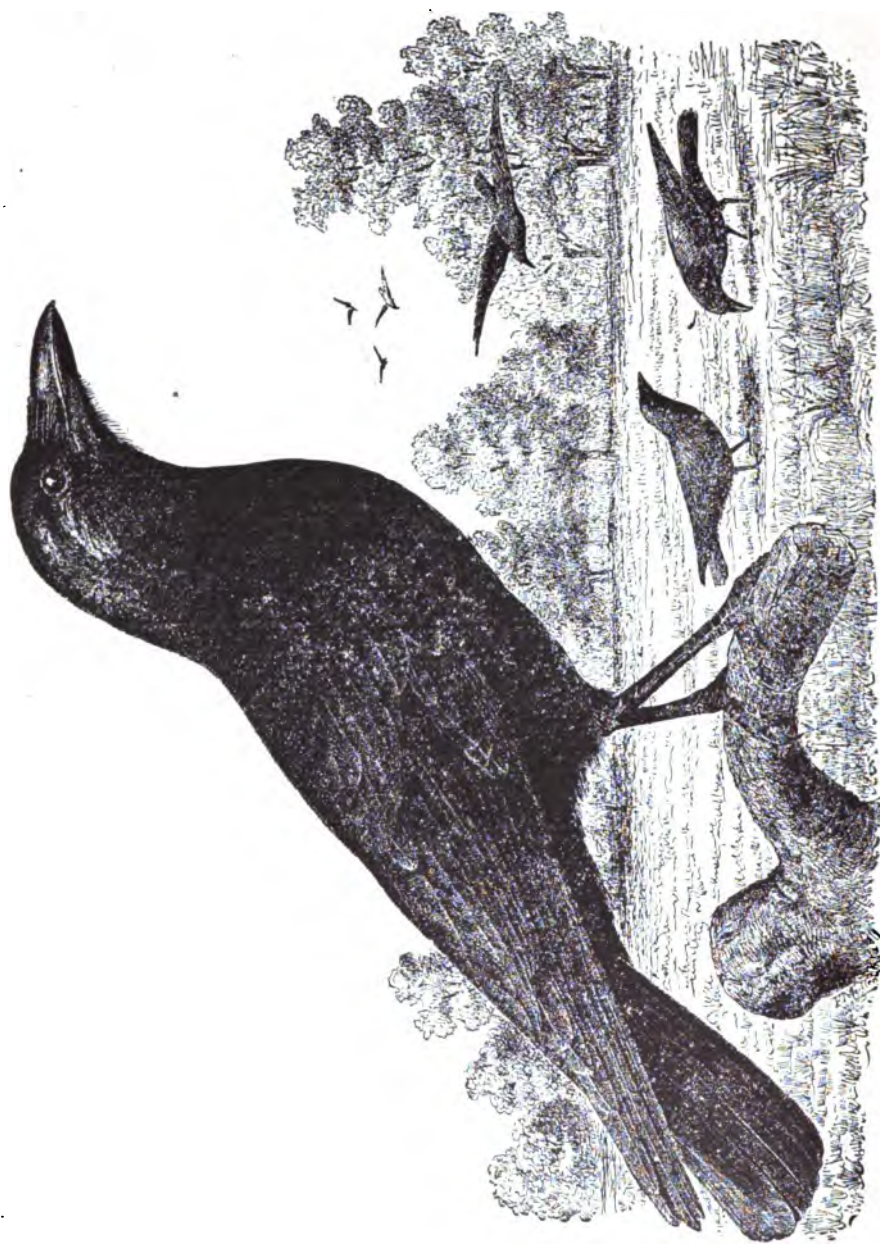


Fig. 3.—The Crow (*Corvus americanus*). From Division of Biological Survey, U. S. Dep. Agr.

2. THE CORN ROOT-WORMS.

Diabrotica 12-punctata and *D. longicornis*.

By H. Garman, Entomologist and Botanist.

In 1905 corn fell badly in Kentucky because of wind storms, helped by the injuries of a root-worm, the young of a spotted beetle described by me in the annual report of this Station for 1889 and in the entomological journal *Psyche*. This worm is generally known as the Southern Corn Root-worm (*Diabrotica 12 punctata*), and was treated by me under the title of Corn Root-worm of Kentucky. It is practically the only insect of its genus attacking the roots of corn in the State.

In the articles mentioned, an account of the habits and life history of the beetle were given as far as they were then known to me. It was inferred from the fact that the worms were found at the roots of the late-planted corn in December, and that adults emerged just as winter came on and were again abroad as soon as the winter was past, that the mature beetle hibernates and that the eggs are not, like those of the northern species, left in the soil in corn fields during the winter months. This conclusion was strengthened by the observation that some of the worst injured corn was on land that had the preceding season been in oats or tobacco.

With a single-brooded species like the northern *D. longicornis* to deal with, knowing that its eggs are always left in corn fields and that the adults die in the fall, it is plain that one can avoid injury by planting this crop on land that has not recently been in corn. This suggestion we owe to Professor S. A. Forbes of Illinois, who years ago made a careful study of the Northern Root-worm. But our Kentucky Corn Root-worm is not single-brooded, does not pass the winter as an egg so far as we know; consequently rotation will have no such satisfactory effect in checking its injuries.

While the above conclusion seemed justified by the facts gathered by me in 1889 and 1890, yet the evidence as to the manner of spending the winter was not completely satisfactory. We were not then provided with conveniences for keeping insects alive over winter under conditions approximating those prevailing out of doors. In the fall of 1906, the insect was taken up again, and large

numbers were discovered, by sweeping with an insect net, to be feeding on alfalfa and red clover, where they were followed until severe cold in December compelled them to retreat into winter quarters, probably into crevices in soil, as is the case with the related striped, cucumber beetle. Examples had been confined on young alfalfa growing in a bench in the Vivarium of the Division, where the conditions could be kept very close to those out of doors. These beetles remained alive over winter and are now actively feeding. On March 15th, 1907, the first really warm spring day, search was made among alfalfa in which the beetles had been abundant the preceding fall, and a living beetle was found there, thus proving that they had endured the winter weather out of doors also. At this date farmers had done no spring plowing, and it was not until more than a week later that people began gardening. No one was then thinking of planting corn. Adult beetles were found abroad January 15, 1890, and have now been collected every month in the year, except February.

We have thus secured satisfactory evidence that the beetle lives through the winter. Being active with both wings and legs, it is free to choose a place to deposit its eggs when the proper time for egg-laying arrives in April and May.

That the Northern Corn Root-worm does little harm to corn in Kentucky is shown by its distribution. It is an insect of the Northwest, and has a rather restricted distribution. Professor Forbes of Illinois asserts in a recent publication that it does no harm as a root-worm except in the north two-thirds of that State. Professor G. M. Bentley does not know of its occurrence in Tennessee. Professor Glenn W. Herrick of Mississippi states that it is not an injurious insect in his State; he has not even observed it there, though a specimen of the beetle is in the Station collection. Professor Conradi has not collected the insect in Texas. Professor C. F. Adams of Fayetteville, Arkansas, stated in a letter written December 8th that he had received specimens from the northeastern part of the State. Professor J. M. Stedman writes that both the Northern and Southern Root-worms occur in Missouri.

In Kentucky the northern insect is certainly very rare. The adult beetle has been observed to my knowledge along the Ohio River in the western part of the State on two occasions, once at Paducah and again at Owensboro (August 8, 1899) where it was reported to be eating the silks of corn.

When insects such as the Kentucky Corn Root-worm, become troublesome, in the absence of a knowledge of habits and life-history, it is well on general principles to resort to rotation as a means of avoiding injury. The facts given above show that complete immunity will not be secured in Kentucky by this practice; but it is worth trying. The avoidance of land furnishing pasturage for the adult beetles in late fall and early spring is to be strongly recommended from what we know of the winter history of the insect. The adults are ravenous feeders, and our observations show that they gather together in large numbers in fall on succulent growths of clover and alfalfa, where they are abroad again as soon as severe cold weather is past. They are thus likely to do most of their damage to early corn in the vicinity of land furnishing such pasturage. The application of insecticides to the food plants during the summer months is impracticable on any large scale, because of the great variety of plants fed upon and the wandering habits of the beetles. A more complete study of the summer broods may afford a clue to other treatment, but at present the planting of corn at a distance from the winter resorts of the beetles seems to me the practice best calculated to lessen the injuries.

Summary of the Life-History of *Diabrotica 12-punctata*, the Corn Root-worm of Kentucky.

The life-history of the Kentucky Corn Root-worm as taken from my notes is as follows: Adults appear if the weather is mild, by the middle of March, and gravid females are abroad in April and May and begin to deposit their eggs by May 15, being common until June 20. The larvæ of this brood become pupæ in the latter part of June and these yield adults from about July 10 to 15. On the 19th of July, eggs from these adults have been secured and also recently hatched larvæ. Gravid females are at this time common again, and all of the adults seem to be out of the ground by July 21. Larvæ are to be found at the roots of corn from this time until fall, while pupæ are again found in September and on one occasion were collected in December at the roots of some late-planted corn.

Adults become very common in October and November on clover and alfalfa, where they remain until compelled by severe cold weather to conceal themselves. They come forth, however, when the temperature rises sufficiently in January and March, and

probably also in February, though I have never secured examples during the latter month.

The beetles are specially fond of young and succulent growths of vegetation, and while eating a little of most plants upon which they occur, yet are partial to the more succulent ones, such as red clover, alfalfa, corn silks, egg plant, plantain and cabbage. I find them common in early spring on wheat, timothy and other grasses.

Summary of the Life-History of *Diabrotica longicornis*, the Northern Corn Root-worm.

As determined by the State Entomologist of Illinois, the beetle places its eggs in the soil of corn fields in the fall and then dies. The eggs appear not to hatch until after corn is planted the following spring, but the worms have been observed by the tenth of June. The grubs are found thereafter throughout the summer at the roots of corn until September. It is probable, therefore, that they hatch at different times, or that the worms differ widely in rate of growth, since it is believed that but one brood develops each season.

The quiescent resting stage, known as the pupa, is sometimes seen in the latter part of June, but as some adults appear somewhat earlier, it is believed that the pupa stage is assumed by the middle of the month in some cases.

The adult beetles become abundant in Illinois and Iowa in August, and until cold weather continue common about the silks of corn ears and on various late summer flowers, such as thistles, golden rod, and red clover. Unlike the Corn Root-worm of Kentucky, they disappear at once when cold weather comes on, and no stage except the egg is seen thereafter until corn is up in the spring.

Note.—My attention has been recalled to the Kentucky insect by emphatic statements made by Professor Holden of Iowa in 1905 while engaged in institute work in this State to the effect that the Northern Corn Root-worm (*Diabrotica longicornis*) does great mischief in Kentucky and can easily be managed by rotation. In the Western Farmers' Almanac and elsewhere I have called attention to this error, and wish here to reiterate what I have said, not with any desire to be critical, but with the object of getting farmers back again to the truth. It is not well to lead people into the belief that they have a sovereign remedy for a pest when they have no such remedy. In the end mistakes of this sort left uncorrected, lead to lack of confidence in teachers.

The following is a list of the bulletins of the Kentucky Agricultural Experiment Station which are still available for free distribution.

- No. 14.—Analyses of Commercial Fertilizers, July, 1888.
" 17.—Corn Experiments. February, 1889.
" 19.—Experiments in Pig Feeding. May, 1889.
" 20.—Commercial Fertilizers. July, 1889.
" 22.—Potato Experiments. December, 1889.
" 25.—Strawberries. April, 1890.
" 26.—Corn Experiments. April, 1890.
" 27.—Experiments with Commercial Fertilizers on Hemp. April, 1890.
" 28.—Tobacco Experiments. May, 1890.
" 29.—Commercial Fertilizers. July, 1890.
" 30.—Wheat Experiments. 2, A New Wheat Insect. August, 1890.
" 31.—Some Strawberry Pests. December, 1890.
" 33.—Corn Experiments. April, 1891.
" 39.—Marls. March, 1892.
" 41.—Commercial Fertilizers. July, 1892.
" 42.—Experiments with Wheat; 2, Experiments with Oats. September, 1892.
" 43.—Commercial Fertilizers. December, 1892.
" 44.—Bordeaux Mixture for Apple Pests. January, 1893.
" 46.—Commercial Fertilizers. August, 1893.
" 47.—1, The Pests of Shade and Ornamental Trees; 2, An Experiment on Plum Rot. December, 1893.
" 49.—Destructive Locusts in Kentucky; 2, The Bud-Worm of Tobacco. March, 1894.
" 50.—1, Fruit Growing in Kentucky; 2, Notes upon Vegetables. April, 1894.
" 51.—Commercial Fertilizers. August, 1894.
" 52.—Commercial Fertilizers. 1, Official Analyses; 2, Analyses of Farmers' Samples and Samples Collected by Deputy Inspectors. December, 1894.
" 54.—Notes on Vegetables. March, 1895.
" 55.—Field Experiments with Fertilizers. 1, Corn; 2, Potatoes; 3, Tobacco; 4, Hemp. April, 1895.
" 56.—Analyses of Commercial Fertilizers. August, 1895.
" 57.—1, Wheat Experiments; 2, Oat Experiments. September, 1895.
" 58.—Cut Worms in Kentucky. November, 1895.
" 59.—Spraying Experiments in 1895. December, 1895.
" 60.—Analyses of Commercial Fertilizers. 1, Official Analyses; 2, Analyses of Farmers' and Inspectors' Samples. December, 1895.
" 62.—Strawberries. March, 1896.
" 64.—Analyses of Commercial Fertilizers. July, 1896.
" 65.—Analyses of Commercial Fertilizers. 1, Official Analyses; 2, Analyses of Other Samples. December, 1896.
" 66.—Tobacco. February, 1897.
" 67.—The San Jose Scale in Kentucky. May, 1897.
" 68.—Analyses of Commercial Fertilizers. May, 1897.
" 69.—Wheat. 1, Test of Varieties; 2, Test of Fertilizers; 3, Description of Varieties; 4, Treatment for Smut. September, 1897.
" 71.—Analysis of Commercial Fertilizers. 1, Official Analysis; 2, Analysis of Other Samples. December, 1897.
" 73.—Strawberries. February, 1898.
" 75.—Commercial Fertilizers. June, 1898.
" 76.—Commercial Fertilizers. August, 1898.
" 77.—Wheat. 1, Test of Varieties; 2, Test of Fertilizers; 3, Notes and Description; 4, Red Rust of Wheat. September, 1898.
No. 78.—Ginseng, its Nature and Culture. November, 1898.
" 79.—Commercial Fertilizers. December.

286 *Seventeenth Biennial Report Bureau of Agriculture.*

- " 80.—1, Some Pests Likely to be Disseminated from Nurseries; 2, The Nursery Inspection Law. March, 1899.
- " 81.—1, A Method of Avoiding Lettuce Rot; 2, Potato Scab Experiments. March, 1899.
- " 82.—Commercial Fertilizers. July, 1899.
- " 83.—Wheat. 1, Experiments with Fertilizers; 2, Variety Tests; 3, Notes and Description. August, 1899.
- " 84.—The Elm and Their Diseases. November, 1899.
- " 85.—Commercial Fertilizers. December, 1899.
- " 87.—1, Kentucky Forage Plants—The Grasses; 2, Analyses of Some Kentucky Grasses. May, 1900.
- " 88.—Commercial Fertilizers. August, 1900.
- " 89.—Wheat. 1, Test of Varieties; 2, Test of Fertilizers; 3, Description of Varieties. September, 1900.
- " 91.—1, Enemies of Cucumbers and Related Plants; 2, Experiments with Potato Scab; 3, The Food of the Toad. March, 1901.
- " 92.—Grapes. April, 1901.
- " 93.—Diseases of Nursery Stock; 2, Rabbits and their Injuries to Young Trees. June, 1901.
- " 94.—Wheat. 1, Test of Varieties; 2, Description of Varieties. September, 1901.
- " 95.—Commercial Fertilizers. September, 1901.
- " 96.—1, The Hessian Fly; 2, Dangerous Mosquitoes in Kentucky; 3, Poisonous and Edible Mushrooms. November, 1901.
- " 97.—Commercial Fertilizers. December, 1901.
- " 99.—Oats. 1, Test of Varieties; 2, Treatment of Smut; 3, Test of Fertilizers; 4, Relative Value of the Varieties for Feeding. April, 1902.
- " 100.—Inspection and Analyses of Foods. February, 1902.
- " 102.—Commercial Fertilizers. September, 1902.
- " 104.—Commercial Fertilizers. December, 31, 1902.
- " 108.—Some Results in Steer Feeding. July 18, 1903.
- " 110.—Nursery Inspection and San Jose Scale. December, 1903.
- " 111.—The Hessian Fly in 1902-1903. December, 1903.
- " 112.—Commercial Fertilizers. December 31, 1903.
- " 113.—Protein-Content of the Wheat Kernel. February, 1904.
- " 114.—Insects Injurious to Cabbage. June, 1904.
- " 115.—Wheat. Field Test of Varieties. September 20, 1904.
- " 117.—Commercial Fertilizers. December 31, 1904.
- " 118.—Corn. Field Tests. March 1, 1905.
- " 119.—Labels on Adulterated and Imitation Foods Sold in Kentucky. April 15, 1905.
- " 120.—Some Tree-and-Wood-Infesting Insects; 2, Cabbage Snakes. May, 1905.
- " 121.—Commercial Fertilizers. August, 1905.
- " 122.—Corn—Method of Selecting Seed Corn; Chemical Study of the Composition of a Number of Varieties of Kentucky Corn. December, 1905.
- " 123.—Commercial Fertilizers. December 31, 1905.
- " 124.—On the Adulterants and Weed Seeds in Kentucky Samples of Bluegrass, Orchard Grass, Timothy, Red Clover and Alfalfa Seeds. March, 1906.
- " 125.—Observations and Experiments on Clover, Alfalfa and Soy Beans. March, 1906.
- " 126.—Soils—Method and Uses of Soil Analysis; Analysis of Soil in 1904 and 1905; On the Determination of Humus in the Soil. April, 1906.
- " 127.—The Inspection of Seeds under the Kentucky Pure Seed Law. September 25, 1906.
- " 128.—Commercial Fertilizers.
- " 129.—Tobacco. 1, Selection of Seed Plants and Care of Seed; Improved Methods of Handling the Crop, 3, Elimination of Undesirable Varieties. February, 1907.

Seventeenth Biennial Report Bureau of Agriculture.

**PROCEEDINGS OF THE ANNUAL CONVENTION OF THE
KENTUCKY STATE HORTICULTURAL SOCIETY**

SESSION OF 1907.

Held at Lexington, January 22 and 23.

The State Horticultural Society of Kentucky is an association of fruit growers and others interested in fruit which was organized for the purpose of developing and advancing fruit growing as an art in the State, and to serve as an instrument for disseminating information concerning the best fruit varieties and the best methods of growing and handling them under Kentucky conditions. To this end it holds a meeting each year at some point selected by its officers, at which fruit and fruit growing are discussed. The meetings are open to the public, their sole object being to help Kentucky and if possible place her horticulture abreast of that of the foremost fruit growing sections of the country.

By payment of a small annual fee any one interested in fruit culture may become a member. Copies of the constitution and by-laws may be secured by writing to the Secretary, J. M. Garrett,* Fort Garrett, Woodford County.

The President elected for 1907 is Mr. M. F. Johnson, Buechel, Jefferson County.

The winter meeting of the Kentucky Horticultural Society convened in the Natural Science building of the Kentucky State College, Lexington, Ky., at 10 a. m., January 22d.

The society was called to order by Secretary Garrett, as President Johnson was delayed by a late train.

M. W. Neal was made temporary chairman, and Mr. Samuel Wilson, of Lexington, in behalf of the Mayor, delivered the welcome address, replete with good things; referred to the noble work done by some of the fruit growers and landscape gardeners in and around Lex-

*Deceased, since this was written.

ington; spoke of the botanical garden established in Lexington in 1826, and maintained for a number of years by the almost unaided effort of one man; showed how this Horticultural Society could do great good by extending its influence into the mountain section of Kentucky, where work was needed and a revenue was now particularly necessary, while the coal interests were being developed; spoke of the interest of all men in all walks of life in horticulture, and its upbuilding influence and importance to society; pledged his support to aid this organization and in every way in his power to advance this noble science.

Mr. H. F. Hillenmeyer, of Fayette county, then read the following paper on

THE NURSERY OUTLOOK IN KENTUCKY.

Midway between North and South, as a fruit growing State we can hardly expect to compete profitably in the markets of either one section or the other. This fact at once explains why our sister States of Ohio and Tennessee so far surpass us in the magnitude of their nursery interests. One reaches out for the southern production and the other northward, eastward and westward, leaving us the common dumping ground for both their fruit and trees. In the State there are some forty or fifty nurseries, supplying pretty fully the local demand. For half a century the status of these establishments has been one of moderate prosperity.

I am not a pessimist, but wish to present with perfect frankness all the facts bearing on the two cognate questions of tree and fruit growing. Kentucky is south of the best apple, cherry, currant, and gooseberry latitude. It is north of the most favored peach sections except such as are affected by the mitigating circumstance of open waters. Our very variation of winter temperature, coupled with a rainfall greater than along the lakes or beyond the Mississippi, have their deleterious influences. In so far as the sheer production of fruit of the very highest quality is concerned, we yield the palm to no section whatever, but it is a question of percentage of paying crops that determines the expediency of our fruit and fruit tree growing efforts. With the clearing away of our wood lands, the destruction of birds and the increase of insect and fungus enemies in consequence, fruit growing has grown more precarious and this phase of the nursery industry has waned.

While there has been a decrease in the demand for fruit trees, we have learned to grow berries to perfection and this phase of the nur-

seryman's occupation has increased an hundred-fold. There has of late been a sharp decline in the demand for grape vines. What a bundle of inconsistency the policy and enactments of our State! We invite foreign labor and emigration to subdue and make fruitful hill-sides too poor to yield maize or wheat. The people we covet understand the management of the vine and the regeneration of these barrens with clover and pulse. But lo! after we have colonized them the produce of the vine is tabooed with a prohibitive tax, which is paid by just two vine owners in the State. Even with the enhanced price of table grapes commercial growing has practically ceased. We want more emigrants but the State's legislation has sadly jolted the growing of grape vines for our own enterprising vine growers and those whom we are so strenuously seeking, who understand the vine and not much else.

The State has grown amazingly in wealth of late years. Has it ever occurred to the fruit growers here assembled that when farm produce is high, that when cattle, horses and everything the land yields is at boom prices, one department of the nursery goes a begging? In the dreadful panic of 1893-96, when wheat and corn were hardly worth a song and a race horse not worth more than the halter that transferred him from one owner to another, the grower of fruit trees was on the crest of the high tide of prosperity. Man is naturally improvident. When he can make money easily at one thing he understands he will spend that money for the purchase of every luxury rather than make the effort to produce that luxury by effort in any alien field. This is pronouncedly the bane of the South. In 1893-96, with corn at 20 to 25 cents and wheat at 40 to 50 cents every land owner turned his attention to other lines of effort. It is an ill wind that blows no good and poison to one interest may mean prosperity to another.

While an era of general prosperity in a State like Kentucky may not stimulate the fruit growing interests of a nurseryman, it is sure to accentuate the demand for flowers and ornamental trees. The demand for this line of goods has of late years been exceptionally strong. The number of greenhouses, or their extent, has certainly doubled within ten years and the production of lawn and forestry stock increased four-fold. There is a decided disposition just now on the part of some Kentucky nurserymen to abandon one branch to engage exclusively in the other. They forget, however, that their calling is an exact reflex of the monetary ability of their patrons. In a time of stress every superfluous expenditure is cut off and purchases directed into the channels of

absolute need or expected profit. With the inherited and personal experience of many generations of nurserymen, who in the same land on both sides the great water have managed to thrive under two variant flags, there is abiding faith in the future of his people's calling. So long as the mouth of all humanity shall water for the blushing fruits of the orchard and the encrimsoned berry of the bramble and the vine make to leap with joy the heart of childhood, safe is the art of him who appeases the one and gives surcease to the other.

When shade trees shall cease to be a joy to the weary, or when their proud and graceful forms, lispings in the breeze, shall fail to fill the eye with beauty and the ear with music, then shall this craftsman fear. When the senses are dead, when the fragrance of flower and the beauty of bud and bloom cease to make the heart swell with the sentient joy of nature's beauty, then, but not till then, shall we fear the future of this calling.

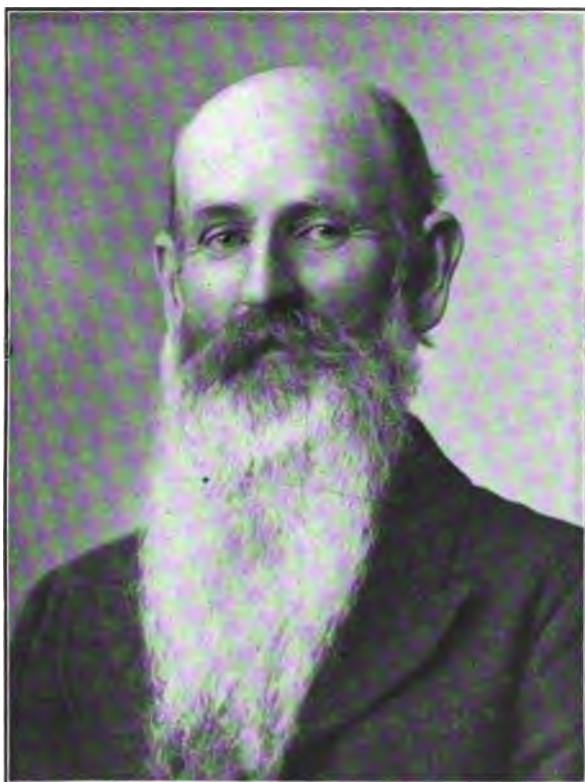
Mr. Neal spoke briefly of the important work being done along horticultural lines by the Park Commissioners of Louisville—referred to Cherokee Park as unexcelled in beauty by any in this country, and that in a general way the parks of Louisville were keeping pace with those of the largest cities.

Varieties of apples were next discussed.

Dr. J. C. Lewis, of Tip Top led off and spoke of Early Transparent as the best extra early apple. Maiden Blush, which had for years held an important place among summer apples, now scabbed badly. Summer Pearmain, one of the very best, he had preserved in perfect condition in cold storage and brought some to the meeting, also had a sample of Maiden Blush, sound and good. Of fall and winter apples, he thought Jonathan the best, as it had all the good qualities, besides it sold for about \$2 per barrel more than others. Rome Beauty and Wine Sap had important places, and Baldwin in some localities. Grimes' Golden was the best early winter variety, coming slightly before Jonathan, was an early and heavy bearer.

Mr. Hillenmeyer asked him about Benoni, and Dr. Lewis said he was glad Benoni was mentioned, as there was no better summer apple in his orchard, and he valued it highly. Mr. Hillenmeyer asked if Grimes' Golden tree did not die young. Dr. Lewis had found some declining, and thought possibly it was not a long-lived tree, but thought other conditions might have aided in its destruction.

Secretary Garrett followed Dr. Lewis. He said that of summer apples Golden Sweet is important, although of inferior quality. It is



M. F. Johnson, President.

20

the most uniform bearer of large crops of any summer apple and is relished by all kinds of stock. Children are fond of it, and many older people on account of its very digestible character. Red Astrachan is a good market apple and valued as a cooker in every home—but not always reliable. Fanny, an excellent apple, worthy a place in all orchards.

The Summer Rose, a small early striped apple of excellent quality and one never to be forgotten by one who has owned a tree; no home orchard should be without it.

Of autumn apples we have a wealth, though unfortunately the most of them go to waste before any profits can be gotten from them. Dr. Lewis did not mention Richard's Graft and Jeffreys, both excellent apples of the highest quality. The Fall Wine is worthy a place in all orchards, for its size, color, quality and uniform bearing make it a most dependable apple. Fallwater, an apple of the largest size and a great bearer, but unfortunately the tree dies young, as many precocious things do; but the quality is very pleasant and the apple has grown in favor year by year. Of winter apples not mentioned by Dr. Lewis, Mr. Garrett called attention to the Seedlings of Wine Sap, Black Twig and Arkansas Black, the former lacking color often, but of the largest size, very good quality—a splendid tree and one of the best, if not the best, keeper he had ever grown. It will keep in an ordinary cellar until late spring. Arkansas Black has much better color, somewhat smaller in size, about the same quality but scarce so good a keeper. He thought these two apples of great value.

York Imperial is an early dependable, large bearer, of reddish yellow apples, that do not hang on well and must be gathered early in this latitude; nor will they keep much later than January 1st, unless in cold storage. Nor has this apple the highest quality, though a very agreeable aroma, the flesh is rather too firm; withal, this is a desirable apple and if sprayed and kept thinned, for it is inclined to overbear and much of the fruit small and colorless, it is one of the foremost apples set at this day.

On dry, rich, deep soils the Janet can still be raised, but most fruit growers discourage any further planting of this old excellent apple.

The Stark, a large greenish red apple—coming into bearing early and producing large annual crops of apples very suitable for home use, should be set in every farmer's orchard. It does not hang on the tree very well, and is of very poor color; nor does it keep late, though better in this respect than Grimes or Jonathan. Its fine size and good quality

242 *Seventeenth Biennial Report Bureau of Agriculture.*

and uniform bearing will give it a place in every home orchard.

Of course, there are only a few of the apples that do well here, by no means all, not even the most prominent, but they are among the most desirable.

The society adjourned until 2 p. m.

Pres. M. F. Johnson, having arrived, took the chair in the afternoon session. Spoke of new varieties of apples for Kentucky, and said that Kentucky had been rather behind other States in introducing new varieties.

The question was asked as to the Wealthy as a valuable apple for Kentucky. M. F. Johnson thought it had passed the experimental stage and was of unquestioned value in Kentucky. Said also that Rome Beauty in the mountain section was often extremely large and high-colored; had seen mountain apples of this variety 16 inches in circumference and that would weigh one pound. Said further that the Ben Davis had been found by the Department of Pomology to be more at home in every part of the United States than any other apple.

Mr. W. A. Cox spoke of Dr. Walker as a very good home apple of fair color and quality, and a late excellent keeper.

Considerable talk was brought out in regard to this apple but the general opinion was it did not deserve much consideration.

Spencer Seedless was spoken of, but opinions of all were that the man who would spend his money for it after all had been said on the subject by fruit journals, should be "bored for the simples."

Cultivation and care of apple orchards was then spoken of. Mr. Garrett referred to the system of mulching much talked about in the East, and thought in some sections where mulch material was cheap and easy to get it would be worthy of trial; he had used rock in the mountains, picked up on the surface and piled in long rows in line with the trees and found the soil under these rocks uniformly moist and full of humus. Had observed forest trees greener and of better annual growth under heavy mulch than under cultivation. The check to evaporation, washing, hot sun and drying winds are favorable to mulch culture; while on the other hand mulched trees had their roots near the surface, and were more easily blown over, and should the mulch system be discontinued, decided injury from exposed roots would result.

Mr. Hillenmeyer thought the mulch system was a doubtful experiment, that while nitrification would necessarily go on much more rapidly under any mulch, and particularly beneath the rock, yet questioned the practical advisability of this radical change of method.

Mr. Johnson thought some cultivation was absolutely necessary to highest development of tree and fruit. Dr. Lewis thought it folly to try to raise fruit without cultivation; would never plant a tree where it could not be cultivated; fence corners and waste places no place for fruit trees, but level, or comparatively level ground for successful cultivation. Mr. Cox said, in his section the growth of trees was nearly always sufficient under any system or care, but that imperfect fruit from lack of spraying was the important thing. Mr. Garrett spoke of spraying as being so essential that no first-class fruit could be produced without it; that on close inspection all apples that had not been sprayed showed the need of it and that on unpacking the fruit sent to Blue Grass Fair for exhibition he could tell at once which fruit had been sprayed and which had not, and the sprayed fruit won most of the prizes in apples.

Mr. Johnson asked if top grafting would increase the life of an otherwise short-lived tree.

Prof. Mathews thought Kentucky was south of the line where apple trees lived to a very great age and that all apple trees in Kentucky died much earlier than in New York or New England, but that in distinctly high lands in Kentucky considerably better results would be expected; that the mountain region of Kentucky offered better possibilities as an apple-growing region than the more level lands, and thought the tendency was to push into this section for apple lands.

Mr. Johnson thought some of the Russian varieties, as they withstood the cold of the Northwest might also live longer in Kentucky.

Mr. Samuel Nuckuls asked why Rome Beauty lived such a short time in his neighborhood, and whether or not it was the system of grafting.

Mr. Hillenmeyer said that every variety had its root system and characteristics and that whole root or piece root had nothing to do with it, nor could the direction or quantity of roots be influenced by it, but that Rome Beauty sent its roots near the surface and the hot dry summers killed a great many trees and extreme cold froze the roots and killed more of them.

Mr. Hillenmeyer said that every darkey on his place was thoroughly acquainted with the root characteristics of each variety of trees and could be depended upon to pick the easiest sorts to dig without any horticultural training other than their experience.

Prof. H. Garman, Entomologist and Botanist of the Kentucky Station, read a paper on

SOME APPLE ORCHARD PESTS.

One who studies the ailments of plants must be constantly on his guard against a tendency, after a time, to see in fruit growing only a formidable array of rots, and scabs, and mildews and borers. This feature of the business at times shuts out much of the pleasantness of his prospect from the practical fruit grower, but he has some compensation for the labor and worry the pests cause him when he harvests a fine crop and pockets the proceeds. To the entomologist and botanist there is no such relief. Fruit growing is to him a perpetual battle with fungi and insects, and if he does not at last become a pessimist, seeing nothing but trouble, it is because he recognizes his danger and clings for dear life to his belief in head work as a way out of difficulties.

Last season the fungus pests were particularly trying. The blight began in the early part of the season with the new twig growth and showed a strong inclination to destroy the fruit spurs, while fruit that escaped this early visitation was, in some localities, badly marred by bitter and brown rot.

BLIGHT OF APPLE AND PEAR.

(Due to *Bacillus amylovorus*.)

This twig blight is no new enemy. It is the disease we have so long been familiar with on pear, and which has always done more to discourage the growing of this fruit than any other ailment due either to fungi or insects. Thousands of trees have been destroyed by it. No variety is completely exempt from its attacks.

When the rainfall is above the average and trees make rapid and succulent growth during the early months of the season, blight is sure to prove severe. It takes any part of the pear tree, except the roots. With the apple, as twig blight, it is pretty closely restricted to the terminal growth, and does its worst mischief by destroying the setting fruit. Numerous complaints of this mischief came to me from all over Kentucky last spring. Some fruit growers became greatly alarmed about it, and asserted that it was destroying all of the young fruit. To what is blight due? This question has been asked and answered many times. Yet I found not a few of my correspondents disposed to question the accepted views of scientific men, and offer other explanations and base new remedies on them.

It has for many years been established that the disease is caused by a germ, not very different from those associated with swine plague and other infectious and contagious diseases of animals and man. If I can succeed in impressing this fundamental fact upon you, and you in turn impress it upon your neighbors, it will perhaps be as much as I should hope to accomplish at one gathering of fruit growers. A prevailing uncertainty as to the cause of blight has, in the past, led to much half-hearted and ineffective work in dealing with the disease.

If one squeezes some of the sap out of one of the blackened twigs of either apple or pear, and examines it with the compound microscope, he will find it swarming with minute living objects shaped somewhat like an egg, but not thicker at one end than at the other, being more than twice as long as wide, and measuring about .0001 inch in length. These minute plants or germs are commonly single, but when growing rapidly divide crosswise, so that one often sees them in doubles, the individuals not having become separated. Millions of them appear in a small droplet.

Quite frequently last spring the blighted apple twigs underwent a sort of fermentation, and the sap exuded, forming a droplet on the outside. The watery part of the sap when exposed to the air soon evaporated, leaving milky whitish (opalescent) gumlike masses, consisting almost entirely of the germs, as was demonstrated repeatedly by transferring them to the microscope and by making cultures of them on gelatine in glass tubes.

The same germ is the cause of blight in both apple and pear. Insects are sometimes present in the blighted apple twigs. A small beetle (one of the *Scolytidae*) was frequently observed in them, having bored in from the side and then made itself a cavity in which it deposited several roundish translucent eggs. This insect was sometimes charged with the injury but it seems always to mine the wood after it becomes blighted, and the majority of the blighted twigs examined contained no insects whatever, a fact sufficient to prove the disease not directly due to it.

Yet, when it is remembered that the disease may be started by first thrusting a needle in blighted wood and then making a puncture in sound wood, the part insects take in conveying the disease will be clearly understood. They simply carry the germ from tree to tree and from blossom to blossom. The blossoms, as you know, draw to them hundreds of insects. The honey bee is a conspicuous and useful member of this army, but on its jaws have been found the germs of blight, and

cultures of the germ have even been made from them. With a knowledge of this fact, I have still been skeptical as to bees carrying the taint and introducing it, and it seems a very unfortunate and perplexing condition considering the importance of bees, their necessity in fact, in cross-pollenizing some fruit varieties. But we are compelled to concede its capacity to do this mischief by the results of experiments made, I think, by Professor Chester some years ago, in which he removed some of the germs from blighted wood, mixed them thoroughly with water and then with a camel's hair brush simply moistened the stigmas of blossoms with the water. The blight penetrated the pistils and thence extended down the fruit spurs, killing everything in its path exactly as is done in nature. One cannot want a better explanation of the blighting of fruit spurs which occurred last season than is afforded by these facts. But the bee does not commonly use its jaws for gnawing, and is not likely to visit the old blighted bark in the spring of the year to get the germ. It probably gets it incidentally from the blossoms while gathering pollen and honey. Numerous small puncturing insects and gnawing beetles are also attracted to the blossoms, and these visit and work on the bark, hence are very likely the means of bringing the germ to the blossoms in the first place. But with the germ absent from a neighborhood, their visits would be perfectly harmless. They cause blight in the same sense that a fly, dropping in one's broth when cholera is about, may cause an attack of that dread disease. The fly brings the cholera germ, and ordinarily when there is no cholera in the neighborhood it is comparatively harmless. The mosquito brings us malaria or yellow fever, but ordinarily when these diseases are not about the bite of a mosquito is not a serious matter.

But what I want to bring out especially is the fact that, while the insects are not the primary cause, they are important as agents in the spread of the disease. They will not cause the trouble if it is not already in the neighborhood, but they will bring it to your premises from your neighbors, and will carry it from any blighted tree you may have on your place. If, therefore, you could by spraying your trees reduce the numbers of insect enemies you could by this means prevent to some extent the spread of blight, for I believe insects to be the chief agents by which it is disseminated. Spraying with Paris green and arsenate of lead is thus calculated to do some good in checking blight. But once the beak of an insect has introduced the living germ into the sap of a tree, the mischief is accomplished and no spraying that may afterward be done will help matters. Moreover, it is impracticable and undesirable

to prevent by spraying the visits of insects to the blossoms, at which time one of the most serious injuries is done. So that while direct applications to the bark and foliage may have some value, they can only be considered as palliative and not calculated to reach the root of the evil.

If blighted pear or apple is in your neighborhood it must be destroyed before your trees are safe from blight. The germ causes the disease, the insect simply carries it about. Get rid of the germ and the insects will do no harm so far as the disease is concerned.

This is the philosophy of the cutting recommended by those who have studied pear and twig blight. It will not succeed unless the cut is well below the evidently diseased wood. It is not likely to prove satisfactory if only practiced when the disease is everywhere and is rapidly spreading. The most effective work is to be done when the trees are not growing and but few or no insects are about. Eradicate it completely in a neighborhood at such times and the only chance of its coming again is by the agency of insects traveling from distant orchards or on diseased trees brought into the neighborhood from the nursery.

BITTER ROT OF APPLES.

(*Glomerella rufomaculans*.)

During a visit to Hardin county last fall I was struck as never before with the capacity for mischief of a fungus that has been familiar to me for many years. It is ordinarily present on the fruit of apple trees in the mountain counties and in the extreme western part of the State, but to see a large part of a large crop in a splendid and well handled orchard spotted with the bitter rot fungus is to get a vivid impression of the harm it does and the loss in money it occasions.

This fungus is little known to fruit growers excepting as it is seen on the fruit itself. For although it attacks the tree, its chief and most noticeable mischief is done on the fruit. This it attacks at any part of the side, and spreading concentrically from the point where it enters, produces a round, brownish black spot that finally joins others and blackens the whole apple. The surface of the region attacked sinks after a time and small pimples about as big as a pin point appear and later break open, allowing a pink paste-like mass to appear. This is, however, very small in quantity and likely to be completely overlooked unless one uses a hand magnifier. This pink substance consists of the microscopic fruit of the bitter rot fungus, and is the part concerned in

conveying the rot to other fruit. Some of the thousands of spores doubtless get into the air and are carried to new localities. Some are carried by insects and sometimes man carries them upon the hands, upon clothing, or on the fruit. Fruit with the characteristic brown spots is frequently seen in the market.

We have some other rots affecting apples, but this is the most generally distributed and most destructive. I saw last summer the fruit of whole trees marred by it, so that it could not be put on the market.

Though somewhat more highly organized than the small germ causing blight, its nature is not very different. It can be proven by anyone to be the cause of bitter rot by introducing with a clean needle a bit of the pink substance under the skin of a sound apple. In a few days a brown spot will appear where the puncture was made, which will slowly increase in size and later the little fruiting pimples will appear.

Insects have nothing directly to do with the disease. It is due to the fungus parasite. But here again, the insect may carry the fruit of the fungus on its teeth and should be kept away from the fruit as far as it is practicable on this account. It follows that, while Paris green and arsenate of lead are not remedies for bitter rot, they may, as in the case of blight, prevent in some measure its spread by destroying insects.

Like blight, again, this fungus remains about apple trees over winter, not it is believed in fruit, though this may sometimes occur, but in the cankered bark. These cankered spots are frequently found about the old fruit spurs, and it is probable that the disease is generally kept alive in this manner, though there may be other winter conditions of which we have no present knowledge.

It was observed last summer in one of the best orchards in the State that the trees were headed low and weighted with their loads of fruits, the tips of the branches sometimes touched the ground. I thought that, as a rule, these particular trees showed most rot. The rot was much more common in this orchard than in one near by in which the trees had been trained to a more upright growth.

I believe that the rotting fruit on the ground was partly responsible for the condition of things in the orchard of low headed trees. The spores are being developed on this fruit during the summer and fall and must reach the bark of the drooping branches in large numbers, producing the cankered spot that will convey the fungus to

the fruit of the next season. Here is a disadvantage in short trunks not commonly recognized. I do not wish to be understood as not favoring this method of pruning. It has advantages that may more than compensate for this disadvantage. Both the defects and the merits of a system must be considered before we can expect the best success with it.

As with blight, the careful cutting away of all cankered wood is to be regarded as the foundation for all successful treatment for bitter rot. In doing this we are removing the cause of the disease. Spraying the trees comes next in importance, as calculated to destroy the insects which carry the fungus about. But spraying for bitter rot is calculated to do something more than this. A good Bordeaux mixture applied from time to time, beginning with the setting of the fruit, will certainly destroy many of the bitter rot spores and thus tend to lessen the evil. So that in the end, considering everything, we come to the same procedure for bitter rot as in the case of blight, and this is fortunate, since treatment for one answers also for the other.

BROWN ROT, BLACK ROT.

(*Sphaeropsis malorum.*)

But we have still a third fungus in Kentucky that helps to make apple growing difficult. It is not as generally distributed as the other two, but where it becomes prevalent is quite as destructive. It is especially common about Lexington, displacing here the bitter rot to a great extent. It may be known from bitter rot by the fact that it almost invariably starts at the eye of the apple and spreads thence, forming concentric rings, looking somewhat like the grain of old mahogany. I have seen it starting at some accidental break in the skin on the side of an apple, but it seems unable to get past the sound skin excepting at the eye. Bitter rot, as you know, starts anywhere on the side. I do not remember having seen a case of bitter rot started at the eye. The rotting tissue due to the brown rot fungus is sweetish, not bitter, and by this again one may recognize it.

It also forms little nodules under the skin which finally push through and break, releasing its minute spores to carry the disease elsewhere. It multiplies thus during the summer. In the winter, like the blight and bitter rot, it is found in the bark, forming there a canker, and producing spores which will infect the young apples next season.

Cutting away cankered and dead wood is thus the foundation for effective treatment of this disease. A good many years ago we made some experiments on this fungus with Bordeaux mixture on the Experiment Farm. Spraying checked the disease decidedly, but it did not prevent a good deal of the rotting. The orchard was an old neglected one in which the fungus had been at work for many years and was, moreover, situated on a poor piece of land where good results could not be expected from apple trees. It was not then understood that the disease was commonly carried through the winter in cankered bark and I am satisfied that if we had started right, namely, had gone over the old trees at the beginning and cut away every trace of cankered wood, we should have saved a much larger proportion of the fruit.

SCAB.

(*Venturia inaequalis*.)

One more of these fungus enemies and I am done. Home grown apples in our markets very often bear round dull black or brown spots, ranging from an eighth of an inch to half an inch in diameter, affecting largely the skin, and leaving the substance beneath sound. This so-called scab is also a fungus trouble due to a very distinct species, and genus even, from the others. Its injury, while seemingly restricted to the skin, extends deeper. If the growth is large, the flesh of the apple beneath is likely to be green and less succulent, and quite often scab started when the apple is young results in a one-sided and stunted fruit. Its effect is not quite so destructive as that of the two rots. Yet fruit spotted with it does not sell well, and every fruit grower will recognize the importance of getting rid of it.

The scab fungus attacks both fruit and leaves, and remains about the trees over winter.

THE FOUR CONSIDERED TOGETHER.

Now here are the chief fungus bars to the production of good apples and pears in Kentucky. Sometimes one is prevalent alone, but more often two or more. I saw in one orchard last summer, bitter rot, brown rot and scab. If we were compelled to deal with them separately, the situation would be most discouraging.

The facts presented above show that one procedure will answer for all, and this one has, in a way, been adopted by some of our best fruit growers, though I think not with a full insight into the reasons why it is calculated to succeed.

Any pruning that can be done in the winter to remove cankered and blighted wood and thus remove the source from which the rots and blights will come the next spring, is putting the axe at the root of the evil.

Any spraying done at this season to destroy injurious insects and later deter others from damaging the bark is calculated to aid in controlling the spread of the trouble. The men who are spraying their orchards with the lime-sulphur-salt wash are doing a double service to the trees. They are destroying insects, and also destroying any fungi that may be exposed to the wash on the bark; for this wash is a fungicide as well as an insecticide.

For summer use, Bordeaux mixture with Paris green must be substituted for it, and the first application should be made while the fruit is erect on the stems, preferably just as soon as the petals fall from the blossoms.

I wish I could say something, in conclusion, that would have effect in the way of persuading everybody in this State of the importance of having his neighbor's premises freed from blight and rot fungi as well as his own. Health authorities of cities act on the assumption that no one has a right to do anything or maintain anything that menaces the health of others. Our whole system of jurisprudence is based on the principal that a man is to be allowed the utmost liberty in all personal matters, except where his conduct is prejudicial to the welfare of others. It is true of late there is a disposition in some quarters to hamper us with regulations of the paternal sort that bid fair, if allowed head, to result in despotism and an enslavement of the individual. We must watch this tendency in our government with some care.

But when a man maintains an orchard next yours that harbors noxious fungi and insects and thus neutralizes your best efforts to keep your premises free and get some profit from your trees, his conduct is plainly to be denominated prejudicial to your welfare, and any law compelling him to abate the nuisance is entirely consistent with the American idea of democratic government for and by the people.

TUESDAY EVENING SESSION.

Prof. Garman gave an interesting exhibition of the life history of important insect pests by use of the lantern slides, showing even more plainly than the microscope the characteristic differences between

insects that to the ordinary observer are very much alike. This was notably true of the scale insects. Their comparative shape, size and habits were well brought out. The codling moth, the curculio and borers of all kinds were well illustrated and a life history and the metamorphic changes of each given. The varieties of insects often mistaken for their more destructive brothers were noted. Vegetable-eating insects, tobacco destroyers and the entire category of nefarious worms and bugs were illustrated, even their parasites. The whole was a very lucid illustration of these pests.

WEDNESDAY.

The morning session was commenced at 10 a. m.

The first business was the annual address of President Johnson. We regret that we have not been furnished a copy for publication.

Secretary Garrett next read the paper sent in by Judge Montgomery, of Elizabethtown, on

WILD FRUITS OF KENTUCKY."

Mr. President and Members of the State Horticultural Society:

When I was notified that I was expected to expatiate on the subject of "Wild Fruits of Kentucky" I felt that it was as sterile a subject as could have been proposed, but after some thought it appeared to be a most fruitful theme and, being fruitful, was a fit subject for treating before a horticultural society

Now, for instance, take the persimmon. While it puckers the mouth in its green state so that one whose lips were 'touched with fire' could not regale an audience unless he knew the alphabet of signs, yet it is much doubted by naturalists whether without it we would have any "possums" and therefore any historic "niggers in the woodpile" or elsewhere for that matter, and if not whether we would have had any civil war or Brownsville affair. It is not only the delight of the opossum, but of hogs and dogs and horses, cattle, goats and even cats, rabbits and chickens eat it with a relish. I have been told by Dr. J. C. Lewis, of Tip Top, and therefore a tip top gentleman, hogs and chickens are fond of its bloom. There is an oblong kind (for the kinds are various as to the shape and time of ripening) with rarely a seed and when gathered frozen, for they often hang on till February, and packed in sugar are superior to dates or figs. We have near Elizabethtown a seedless tree, usually round in shape, with fruit on it now, which is very sweet and if it can be propagated by cuttings or graft should be widely disseminated. My father at Tip Top had a meadow with several trees, and though he hated the sprouts worse

than "Satan hates holy water," he would not allow one of them cut down, as the grass grew rife under them and he said they furnished more feed than five times their space would of corn. I could spend pages in telling of the virtues of the persimmon, but must pass to the mulberry, which not only makes the most lasting posts, but bears a fruit that is relished by all animals and fowls. Jim Farris at Tip Top has one that feeds his large flock of hens and has fruit ripening and green from early mulberry time till frost, and this should be propagated and spread abroad.

But what of the pawpaw, you ask? Well it is just melting in your mouth, and the thought of it makes me too full for utterance and then the service berry. You should go to the woods and get you two or three, for they bear transplanting, and as they are very fruitful you have not only one but three joys forever. I am informed, whether reliably I can't say, that when that grand old man, "Fish" Cook, emerged from the wilderness he brought three of these trees and set them out at Rural Neck, the most beautiful spot on earth except Blennerhasset Island, and upon these, with what he could catch of black haws and pawpaws, he subsisted until he learned how to grow corn and cabbage.

The wild strawberry is a delight to hunt with the girls. Blessed, thrice blessed, innocent creatures, were they "wild fruits" I'd never get this paper to a close.

As to wild grapes, they have made many young men break their necks in climbing for them for their sweethearts.

The dewberries and blackberries have been tampered with by the greedy berry man till people hardly know God's blessedness of these berries in their wild state. I won't let a blackberry bush be cut in my orchard only when necessary to get to the fruit trees to spray or gather, for you may talk of clover and orchard grass, but this bush keeps the soil loose and moist and enriches it every day.

Of course we have wild raspberries and other wild fruits not named, but from few, if any, cultivated berries do we get a jam or a wine equal to that from the wild dew and blackberry. The cobblers are equal to that of the peach and in them the pleasure is, as Queen Elizabeth said of the itch, too much for poor people.

I came near overlooking the wild plum, when I have one in my orchard that bears the largest and most luscious fruit of any wild plum I ever saw. There is a farewell to it that simply passes description. I have often wished the corner of my lawn was a plum thicket. Life

is too short and time too precious for a curculio to try to pierce its skin.

Then the wild crab apple. No cultivated fruit ever made such jellies, to say nothing of its service as a preserve. The perfume of its bloom can alone be rivaled by that of the wild grape that greets you, as on one of those "sun brosiel eves a day of storm so often leaves," you gallop through the wild roads.

Prof. Mathews gave a short talk on nuts and the importance of our looking to the value of hardier pecans, larger chestnuts and more valuable nut trees than we now grow. He thought the high price of nuts ruling this year should be a stimulus. Thought improvement among walnuts and hickory nuts should be undertaken for quality and size and that there was a large field open to us in some of the thinner sections of country where land was cheap and well suited for the growth of nut trees.

Prof. Miller thought the nut trees, on account of their value as ornaments and valuable wood, were worth planting if they did not bear. Said Germany had set us the example; the roadsides there were planted in trees much to the beauty of the country, and their annual crops were important. That chestnuts were desirable trees and did fairly well in the blue-grass, though on light soil the trees did better.

Dr. Lewis said some pecan trees were growing in his neighborhood and for twenty-five years had withstood the climate and borne well, and thought, as did Prof. Miller, that the addition of walnut trees along our roadsides would be of great value, to say nothing of the beauty and comfort to the traveler.

Prof. Garman had observed one place where pecans had grown successfully, though at other places the trees had winter-killed badly, but near Owensboro pecans of somewhat poor quality were easily grown and did grow wild in considerable quantities.

Mr. Johnson spoke of the thin-shelled hickory nuts he saw in the mountains of Kentucky, so thin as to be easily crushed between the thumb and finger and full of meat of the best quality. Livingston and Hickman counties are admirably suited to nut growing. Chestnuts could be successfully grown in many places over the State besides the mountain region. Our native nut trees are rapidly disappearing and more attention should be directed toward that industry.

Mrs. J. M. Garrett read a paper on

TREATMENT OF THE COUNTRY LAWN.

Treatment of the lawn is a subject that should engage the interest of every individual who is either the possessor or occupant of the house he calls "home," whether it be located in the city, village, suburb or far in the country. It may be one of the places where the luxurious millionaire takes an outing for a season, or it may be the humble cottage to which the tired laborer returns at dusk after a long and hard day's work, if that which we call by the sacred name, "home," can boast of the usual attendant, a lawn, this, however small or contracted, is not only worthy of consideration, but of serious concern. We may be indifferent to the appearance of the plot that surrounds our own homes, yet there is not an eye that fails to note with enjoyment an attractive and well-kept yard. We who live in Kentucky where nature, with lavish hand, has thrown around us a wealth of material are particularly and peculiarly blessed. Granting only one native product, Kentucky bluegrass, could we not have a faultless lawn? Add to that our splendid list of trees, the vines that embower the Kentucky mountains, woods and river cliffs, the shrubs and plants that thrive and blossom year after year in places where nature's left undisturbed. We make pilgrimages and admire them in their native haunts. Why can't we have them around us in our homes?

How often the head of the family provides a costly and comfortable house, the wife, in appreciation of the honor conferred, spares neither time nor pains to adorn the interior, and alas! they both forget the lawn, without which the home is sadly incomplete and the whole inconsistent. Given a choice between a handsome house with a neglected lawn and a modest building in the midst of grounds embellished with trees, plants or shrubs, who would not prefer the latter?

Much is at present written and said about the "City Beautiful," and we know of some particular country estates where the lawns are not the least attraction, but my subject to-day pertains to the average country lawn, the one which concerns every country resident. Why is it an exception, rather than a rule, to find a home in the country where the grounds adjacent to the house are given proper care? Should it not appeal to our pride to have the approach to our homes attractive?

Volumes have been written on "How to Make the Farm Pay." No stones are being left unturned as to the "profits of the soil." Accord that the first and chief consideration, there is still left an important place for the lawn. Has it occurred to you that is a paying invest-

ment? Let us look into it. Whose office is it to keep the lawn? I would say every member of the family. The physician advises the weaker sex to cultivate the "garden habit." No better tonic. It robs dame Gossip of her children and crowds out of our lives petty cares. Every child should have a part. What is more conducive to their physical and spiritual growth than such wholesome employment? Home means more to them when they have had a share in the making of it. The co-operative work binds the family more closely together. The study of plants and nature is educational, uplifting, broadening. It takes us out of ourselves and draws us nearer to the Creator.

Let there be in every home at least one periodical treating the subject. By foresight and management it should not interfere with or interrupt the machinery of the farm. One prettily planted place is far-reaching in its effect on the neighboring community. Its beauty is contagious. Others will see and follow the example, so that aside from enhancing the value of his farm, every one who improves his home grounds becomes in a double sense a public benefactor.

Every lawn admits of individual treatment, but there are a few general lines that may be carried out on all lawns—the open space in front of the main building, affording a clear view to and from the house—here a carpet of bluegrass, unbroken by trees or flower-beds—the service buildings in the rear, screened either by vines or hardy shrubs.

The landscape gardener declares that in making our lawns we must first regard the whole as a picture, and that the picture should have a nature-like effect. Avoid scattered effects—keep one or more spaces open—bunch or mass the planting—make views to desirable objects and obstruct views to undesirable parts. Aim for a good perspective from every window, including the kitchen.

Splendid results can be obtained by planting tender annuals, but the first freeze leaves the space bare and unsightly, and the next season finds us confronted by the same problem as the last.

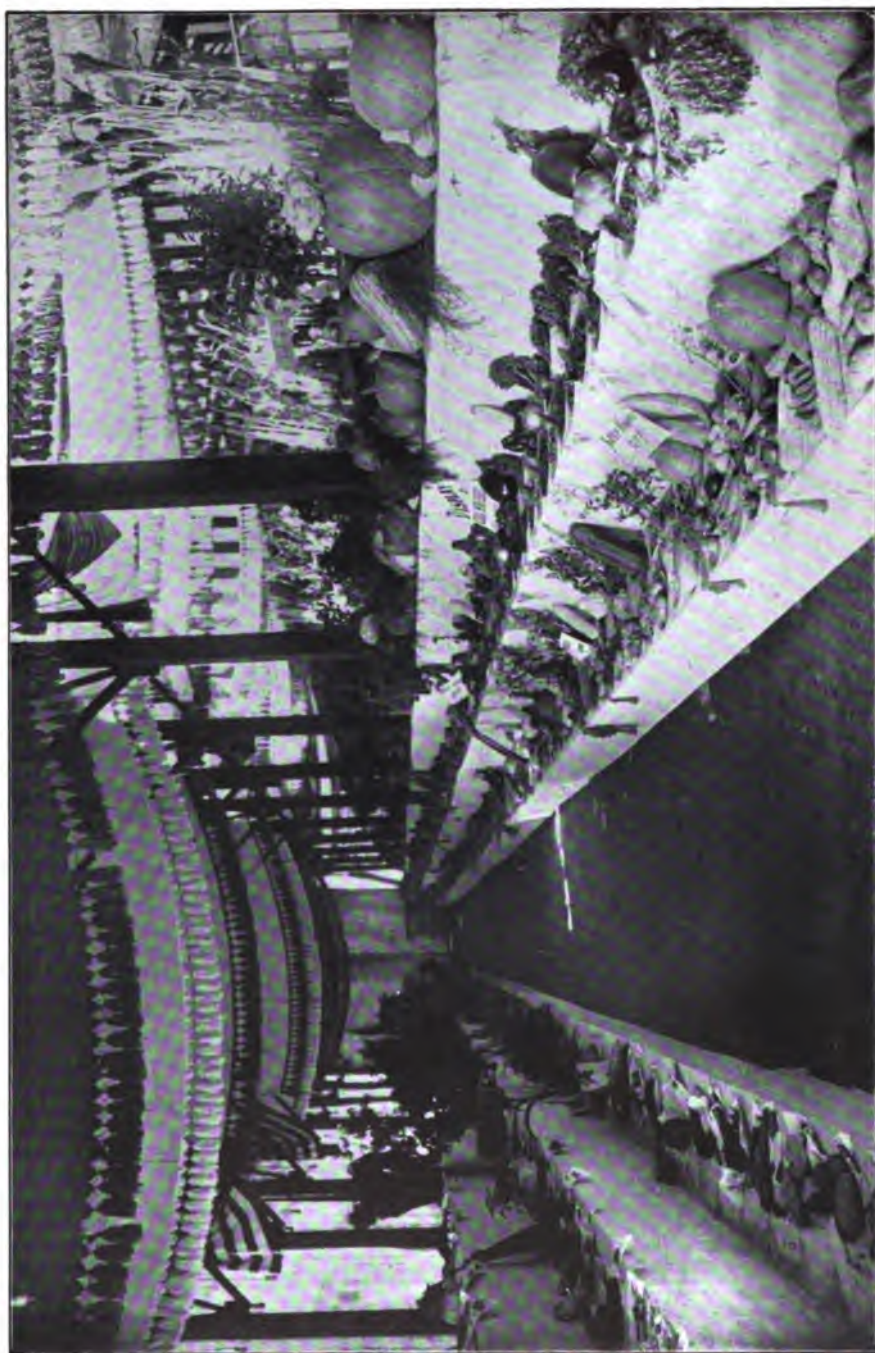
There are numberless varieties of hardy plants which, with judicious selection, and careful planting, increase in beauty and value each year, and afford blossoms all the season.

There are kinds adapted to every situation, that will thrive in sun or in shade—in light sandy compost, or in heavy soil. The same is true of tender annuals, hardy herbaceous plants or hardy shrubs. In each department there is a wide range of color, habit and character of growth and time of blossom.



The Grain Exhibit, Kentucky State Fair, Louisville, 1907.





The Vegetable Exhibit, Kentucky State Fair, Louisville, 1907.

PHOTOGRAPH BY H. GARRMAN

11-11-11

For structural effect, plant tall growing varieties at the back, medium next, and dwarf in front. For winter effect, select evergreens and berry-bearing kinds. There is a long list of vines—annuals and perennials, evergreen and deciduous, climbers and creepers.

There is much, too, to be said about the selection and distribution of trees—but the office of this article is rather a plea for an interest in our country lawns than how to treat them.

Let us begin while the year is young, look over our grounds—formulate plans and set a pace worthy of imitation.

Mr. J. C. Hawes, of Fern Creek, read a paper on

THE GROWING OF SMALL FRUITS.

The successful fruit grower must have a love for the business; a soil adapted; markets within easy reach; a supply of extra laborers near enough to be promptly available in emergencies. Plant no more than can be thoroughly cultivated and properly marketed.

Strawberries.—The first requisite is good land well prepared. Although strawberries grow on most every kind of soil, there are soils that are better suited to their wants and where they will reward the producer with better returns. If not naturally fertile, then the fertility must be supplied by giving a good coat of well rotted stable manure. This should be applied a year in advance of setting the plants and plowed under. The land should be thoroughly cultivated during the following summer in potatoes, onions or beans, then plow deep in spring and harrow repeatedly. Mark off rows $3\frac{1}{2}$ feet apart and set plants 12 to 18 inches in row. Plants should be set deep enough to cover the roots well but not deep enough to cover the crown. Among the best varieties are the Excelsior for early, Haverland, Bubach and Senator Dunlap for medium and Gandy for late. There are others probably just as good, and the only thing to do is to study the adaptability of varieties to the soil and location, discarding those that do not prove satisfactory, but never discard a variety after only one year's trial. One year is not a fair test.

If pistillate varieties are used, plant every third row with a strong perfect-flowering sort that blooms at same time. Begin cultivation as soon as growth is well started, repeating every one or two weeks till frost, never allowing the ground to crust after a hard rain. As soon as the ground freezes cover your plants with good clean straw to protect the plants from alternate freezing and thawing during the winter;

partly uncover crowns of plants when growing time approaches; the mulch will benefit by keeping the ground moist and berries clean.

Raspberries.—A rich, deep soil, well drained loam, is undoubtedly the best soil for the raspberry. Prepare the ground in the spring by plowing and harrowing. Plow out furrows with a one-horse turning plow six or seven feet apart. Set plants in rows three feet apart. Setting plants requires two persons, one to go just ahead with the plants, placing a plant in the furrow and holding it, while the second man draws dirt around it with a hoe, give it a gentle pressure with the foot fills up the furrow then passing on to the next plant. Give thorough cultivation until the first of August. Later culture causes late growth and sap in canes, and thus liable to winter killing. Pinch back the first year's growth when 12 to 15 inches high, causing strong growth of laterals, which are allowed to grow at will, leaving further trimming till early next spring.

Varieties.—Palmer is one of the earliest, Cumberland very large and productive and Kansas a well-tested, good sort. Miller's is one of the leading red varieties.

Blackberries.—Almost any land well drained will grow blackberries. Plant in fall or spring—spring preferable. Prepare ground as for any other crop. Furrow out rows eight or ten feet apart, set plants three and a half or four feet apart in row in manner directed for raspberries. During the first season's growth a row of potatoes or any other vegetable may be grown between the rows. Cultivation the first year should be such as will keep the ground free of weeds and the soil in a nice, mellow condition. Cultivation after a patch has reached full growth consists in plowing first time in spring with plow throwing dirt from plant, subsequently plowing with double shovel or cultivator. The hoe should also be used in the row. The canes which bear this year will die as soon as the crop is matured, and all these canes must be removed.

When the new canes reach a height of two and a half or three feet the top should be pinched off, which will cause the side branches or laterals to form. They should be pruned back in spring to eight or ten inches.

Varieties.—The Early Harvest is small, early and very productive, but it winter-kills some years. The Eldorado, large and sells well. Snyder's is an old, well tested hardy variety.

Every one should have a few grapes. The universal grape is the Concord; the vine is strong, hardy and naturally prolific. The Pock-

lington is a good white grape. Delaware, the finest for quality; Moore's Early, one of the earliest and hardy. Gooseberries and currants may be added, but you must wage a ceaseless war against the currant worm.

The growing of small fruit is a business that benefits all classes and injures none. It is almost the only business in which a poor man can engage and be his own employer. The man with a single acre can engage in small fruit culture and is quite likely to realize better results for the amount invested than one with many times as much. Every farmer should devote half an acre or more to small fruit. Every dollar expended will save two in meat and medicine bills.

The surplus can always be disposed of at a fair profit. But though small fruit culture offers so many inducements to those, meditate embarking in it, for it would be unwise for anyone to engage in it on a large scale without some practical knowledge of the work, no matter how fine and well digested his theories may be.

Prof. Garman spoke of some of the insect pests of small fruits and the fungus troubles, but said upon the whole there were no very serious troubles in this direction that could not be easily overcome by a little care and attention.

Mr. Garrett thought among raspberries Cuthbert and Turner should be grown. Mr. Johnson said Loudon was one of the best in his section. Mr. Cooper said he had found the new Cardinal most excellent as a producer of large quantities of good berries—a black cap in characteristic and a red berry in color, filled a long felt want of a good red raspberry that would grow from the tip.

Dr. Lewis, of Hardin county, read the following paper.

THE CHERRY.

The interest in the cherry tree and its fruit in my own and adjoining counties is periodically spasmodic, lasting only while the ripe fruit is in sight. The cherry tree is among the easiest grown, among the earliest to come into bearing and the least subject to disease and the ravages of insects.

The tree will grow profitably on thin land, but better on medium strong ground with moderate cultivation and fertilizing to secure sufficient but not too rapid growth. The greatest enemy to the sour variety of the cherry tree, in my observation, is our frequent heavy

sleets which will often seriously cripple the trees, owing to their natural tendency to many limbs, making it important to trim and train carefully, with a special view of supporting heavy crops of fruit and sleet. The sour tree will be broken seriously by both fruit and sleet if not trimmed and trained carefully, while the sweet tree right beside the other will be exempt from a single broken limb.

The sour cherry tree needs a great deal of trimming, while the sweet varieties need very little. The sour cherry family will grow well and bear profitably on almost every variety of soil, but especially on level or slightly undulating land with white, bluish or yellow clay subsoil. This character of land is especially adapted for making longer lived and better bearing trees because our frequent dry summers and especially dry Septembers and Octobers seem to hurt the trees seriously on all dry soils, while the greater degree of coldness in the white and yellow clay subsoils during the winter and early spring is a big help in retarding the swelling and bursting of the cherry fruit buds, thereby guarding against damage by the spring frosts—the chief enemy to the cherry crop. The largest and longest lived trees and the most prolific bearers of the largest cherries that I have known were grown on medium high or tablelands with white or yellow clay subsoils, adjacent to drains and swamps where the Fox grape vine grew luxuriantly and bore abundantly.

The bud of the cherry tree being the best encased and protected of any other fruit bud helps it, in being rarely killed, except by late spring frosts following a warm, open winter.

The sour variety is shorter lived than the sweet cherry tree, but this is due largely to its tendency to overbear and damage from heavy sleets. The sweet cherry tree is so unlike the sour one in leaf and limb and form and growth that anyone unacquainted with the trees would hardly suspect them of being of the same family. The sweet cherry requires more care in its cultivation and a drier and stronger soil and more especially in protecting the bodies of the young trees from the heat of our August and September noonday and evening suns, which is a very common cause of serious damage and death to all varieties of fruit trees and more especially to those not properly cultivated, mulched or boxed with the three-sided, open edged box. My observation has been that a carefully cultivated tree does not sunburn.

The yard cherry or other fruit tree can be mulched or protected nicely by a climbing pea vine on the west side of tree. I believe more

cherry trees are injured and killed by sunburn than any other one cause.

The sweet cherry, for the best results, is better planted on high ground, the higher the better, if not too poor and dry. A good, sandy loam will give best results in tree and fruit, and yet in my section, a high tableland, a number of varieties of sweet cherries, the Early Purple, Gov. Wood, Yellow Spanish, Sugar Heart, Elton, Black Tartarian and others. The Windsor and several we have lost names of have done encouragingly well and bear more regularly than trees on lower and better ground. I made a great mistake in planting on too thin ground, having heard in some way that the cherry tree should be planted on poor ground and not cultivated, but I have learned that thin land will grow profitable cherry trees if cultivated and fertilized even moderately, but it is much better to plant both sweet and sour varieties on stronger land and get larger trees and more fruit. The sour cherry has three special points of merit. First, it is easy to grow the tree on quite a variety—almost any character of soil and altitude. Second, it is, under reasonable circumstances, a regular annual bearer, and last, but not least, it is the delight of the good housewife and stands at the head of her list of fruits for canning, preserves and pies.

The sweet cherry tree, in my opinion, has three special points of usefulness to recommend it to every owner of ground enough to plant one tree on. First, it is among our best and quickest growing shade trees, several varieties growing cone-shaped and reaching away up to forty to fifty feet, with rich, green foliage, holding on as late as the latest popular shade trees, and this is especially true of the Early Purple or Purple Guigne; second, as an ornamental tree. Just imagine a tree thirty to fifty feet high, cone shaped, snow or cream white, seemingly solid in beautiful blossoms and fragrance. What could be more attractive to a lover of the beautiful in nature, except it be the next virtue of this tree, when the bloom has dropped and the little embryo cherry has grown into a bright red, yellow or black, luscious fruit, peeping singly or in bunches from under every leaf—the beautiful, ripe fruit in striking contrast with the green leaves?

Our high, wet lands seem to be well adapted to the growth and fruiting of both sour and sweet cherries. The large Montmorency, Early Richmond, Dye House and Montmorency Ordinarie grow well and fruit to perfection; also the delight of our boyhood days, the old Morello, does well yet, but short lived from neglect in trimming and care.

262 *Seventeenth Biennial Report Bureau of Agriculture.*

In our section we have three to five varieties of a seedling sweet cherry tree, sprouts from very old trees thought to have been budded on sweet cherry sprouts, that do splendidly for us, making large, well-shaped, long lived trees; come into bearing late, ten to twelve years, but bear large crops of medium-sized fruit in large quantities, sixty to eighty gallons, fine preserving and the best shipping cherry on the list.

Several visiting gentlemen were so enthused on seeing my seedling trees in full ripe fruit that they ordered one and two dozen to plant for themselves and I could not prevail on them to plant less of these and more of earlier bearing varieties.

Mr. President, I feel that we are not doing enough to encourage the raising of more fruit trees of all kinds and more fruit, especially the cherry. Just to think that on an average not one farmer in twenty has an apple now for his family and not a single can of cherries for winter pie, when with a little effort and energy one acre of ground will grow all the fruit he could use the year through.

Mr. Garrett was asked to give his experience with cherries, as he had several thousand trees growing in Estill county. He said that early cherry growing was not so successful as late sorts; that people wanted cherries more after they were gone than when they were on hand, hence he had set largely of late sorts—Montmorency, E. Morello and Baldwin. Had also set some Richmond and Dye House, but thought early cherries came too nearly with strawberry crop. Of sweet cherries he had Napoleon Bigarreau and considered it the best light cherry. Windsor is a valuable black, but blooms too early. Dykman he considered the best black cherry—late, large, sweet, thrifty, strong growing tree and good bearer. He thought Hortense of some value, as it was about the best tree of all the Dukes; had set about 125 of these, but the bulk of the orchards have been set in Montmorency and Napoleon, some 900 each of these two sorts and he believed they met the demands better than anything else. Found sun very destructive and kept the tree trunks wrapped with broom sedge. Here in Central Kentucky used hemp to protect stem from sun; it will last three or four years. Thought cherry growth should not be stimulated if a valuable tree is desired. Very little cultivation or pruning necessary; dry and even rocky soil more suitable than heavier soil. Picking is a problem, but not so difficult as strawberry picking, as once going over a tree is sufficient, and

cherries will hang on waiting for pickers for several days after they are ripe. Birds are bad in some sections, but not in the mountains. A cherry orchard will pay \$50 per acre on well located land for several years and requires less labor and care, except picking, than any other tree fruit. Besides no one ever hears of the market being glutted with nice cherries.

Cherries can be preserved, canned, dried, made into wine, candied, pickled or brandied and there is no fruit better in whatever way you keep it. A cherry pie takes high rank with the epicure, and ripe cherries on the tree are just about the most inviting proposition you can put before the small boy. If birds have found anything better they have a poor way of showing it, and can spend about fourteen hours of each twenty-four in the cherry tree and never seem to get sick or tire of the tender fruit.

Mr. T. L. Button read a paper on

HOW WE GROW PEACHES IN TRIMBLE COUNTY.

Mr. President: Not many years ago we had in Trimble county thousands of acres of as lovely and productive orchards as are now seen in some of the noted Elberta producing sections of Georgia, but low prices in 1896, 1898 and 1900, together with great damage done the trees by the cold weather and freeze of February, 1899, discouraged peach growing here to such an extent that comparatively few orchards have been planted since. I cannot explain just why this is so, unless it is on account of so many of our young men and boys leaving the farms and going to our cities. Our land is wonderfully adapted to the production of fruit, especially the peach. In the balmy days of peach growing years ago we had two or three nurseries here in the county, but they, too, have gone. Now please do not imagine from the above statements that we have quit growing peaches in Trimble county. We grow lots of them yet, but not half those we could and should be growing. Once in a while a large grower of peaches here will grow his own trees. This is the surest way to get varieties true to name and the finest peaches. If this plan is followed, seed from hardy seedlings are planted for budding stock. The seed are dropped in the furrows early in the fall and covered lightly. Dampness and freezing through the winter loosens the shell which helps to secure a good stand. Early in the spring a harrow is run over the rows pulling in some loose soil and this is continued at intervals to prevent a crust

forming and to have the furrows filled level by time the little trees begin to appear. Clean cultivation is essential clear through. In May or June when the trees are fifteen or twenty inches high they are stripped by holding the top ten or twelve inches from ground in one hand and with a quick, downward motion of the other hand the tender branches and leaves are pushed off. This is necessary to have smooth, clean bodies to bud in. August is the best time to bud. Buds are always taken from bearing trees and from the ones that have borne the most uniform and large fruit and that are known to be free from disease. Disease can be surely transmitted through the bud. Long corn shucks dampened are generally used to tie the buds in, and the tying is as important as the budding; however, any good farm hand can bud peach trees and any farmer most can grow his own trees. Early the next spring before growth begins the seedling tops are cut off with an upward sloping cut, beginning just below on opposite side and ending just above the bud. Suckers are kept off and careful cultivation given during the early stages of growth. If we buy trees out of the county we generally buy southern grown, believing them to be freer from disease, cheaper and better than northern trees. We prefer medium sized, stocky trees to big, overgrown ones. We select the highest and driest location of the farm for the peach orchard. If a large orchard is to be planted, the different varieties are planted in blocks or rows across the orchard with reference to the greatest convenience in gathering and handling the fruit, and also with reference to the inter-pollenization of the blooms. The early kinds or varieties inclined to rot are planted on the thinnest part of the field or a southern slope generally. We very rarely plant other fruits with peaches, such as apples and pears. If we crowd lots of trees on an acre we plant close north and south and wide east and west, something like 16x12 feet.

Some cultivated crop is grown in the young orchard for about three years after planting. Young trees make greater growth where tobacco is cultivated than any other crop. We aim to push the wood growth as fast as possible the first three years, after which they should begin bearing fruit. A peach tree that fails to make good growth in the two first years after planting is rarely any good.

The easiest way to dispose of borers or worms is to hill the trees up five or six inches in June, pull the hills down in September or October, when the little worms are easily found and destroyed and no damage done the trees.

After the trees begin to bear and have a crop of fruit on them, clean, shallow cultivation often repeated and liberal thinning of the peaches when small are essentials for best quality, size and high priced peaches.

Between seasons and off fruit years hogs and sheep can be profitably pastured in the peach orchards. If any wormy fruit or brown rot in the orchard hogs turned in every day or two to clean up all down fruit help the hogs and the orchard.

I have given as briefly as I could the outline of the general practice here of growing peaches. But really the most important part of the whole business is the profitable marketing of the fruit after we have grown it. Here is the turning point between success and failure and the stumbling block over which so many of our growers have fallen. Some of the necessary requisites to profitable marketing are firmness of the fruit when gathered, clean, attractive packages of full measure, careful grading and honest packing and to sell direct to the consumer as far as is possible.

Mr. Phil T. Allen, of Louisville, gave some impressions he received from the fruit exhibit at Louisville during the State Fair. Thought the lack of spraying the most noticeable thing; nearly all fruit would have been better if more care along that line had been taken. He suggested having an information bureau in connection with the fruit, giving methods of growing, spraying and information in regard to the value, productiveness and possibilities of the fruit on exhibition. At these exhibits everyone wants to grow some fruit that has a beautiful color or size, when possible, the difficulty connected with the growing of this particular fruit or the poor quality will render it almost useless except as an exhibition fruit. The public ought to know this, for they are constantly making notes of these fine specimens. Alexander, Red Bietigheimer, Twenty Ounce Pippin and Wolf River seem to attract the public mightily, and are apples in this latitude of very doubtful value. They will pass by such valuable sorts as Jonathan, Grimes, Wealthy, Wine Sap for larger and more showy apples. The same is true of peaches and pears; in fact, all fruits.

Mr. Johnson thought the plates should be named very carefully and distinctly for education of those living outside the fruit districts. The length of time it takes to grow fruit would seriously

annoy any one when they find after years of waiting they have the varieties they did not intend to grow.

Mr. Garrett spoke of the dust spray and thought it worthy of consideration under certain conditions—wet seasons, or in rough, mountainous regions, or where water for spraying was scarce and where fungus troubles did not exist but where the codling moth was most prevalent, as it was generally considered that dust spray was effective against codling moth.

State Senator Newman delivered an address on the

MUTUAL BENEFIT THAT SHOULD EXIST BETWEEN THE
AGRICULTURAL COMMISSION AND THE
HORTICULTURAL SOCIETY.

If it is my good fortune to become Commissioner of Agriculture it will be my purpose to bring to my aid such valuable assistance as that of this Horticultural Society. In no other way could the Commissioner be instrumental in disseminating the information in regard to fruit. It is my belief that no State can grow more or better fruit than Kentucky, but you want first to produce it and then get a market for it, and with the right sort of clean, well-grown fruit near shipping points and in quantities large enough to invite the attention of fruit buyers and transportation companies you will shut out thousands of barrels of New York apples that are put on your markets every year. You should be an exporter rather than an importer. There are thousands of acres and thousands of men ready for the production and it will be the purpose of my office to bring out the work in each section through some means similar to this organization.

The Commissioner of Agriculture should be your most important officer in the State, except that of Governor, and I had rather be your Commissioner than to hold any except the Gubernatorial office, because the tillers of the soil form the most numerous and most important body of citizens in the Commonwealth. The merchants and manufacturers among you are in small majority when the vast agricultural interests are considered.

You refer to spraying, there is not enough information abroad on such subjects in this State. During a stay of two years in Colorado I found that every fruit grower was thoroughly posted about spraying, as along other branches of his work. This society is doing a noble work and it shall be my aim to assist you in spreading broadcast all such in-

formation. The control of the one pest, codling moth, will pay for the expenses of doing so and all the expenses of the State besides.

Some men think if they get information from books it is of little value and entirely different from common sense farming, but I tell you the opinions of men are changing rapidly on this point. Take a man like Coburn, of Kansas, and he has done more for the State than any hundred men in it. He has made that dry State, where 25 to 30 bushels of corn used to be grown, bear 100 bushels; has shown the use of kaffir corn in the driest portion; shipped butter out by the train load; apples to Europe by the ship load. It takes men like this, and money too, to get good results from the soil.

If I call for more money for my office it will be because I can see how enormously it will pay. Grow any fruit crop in the mountains of Kentucky you please, whether apples, peaches or blackberries, and ship it out by carloads, and that section, instead of being a drag to the machinery of the State, will be one of the greatest producing sections and the young men will be drawn back to the farm.

The State Fair should be a valuable object lesson, and now that with all of her resources the Fair will have at her command about \$180,000, if I have any word to say, there will be on these grounds a certain amount devoted to forestry—an apple orchard growing and illustrating the proper methods of culture, pruning and spraying. I want further the name of every farmer in the State, and I want to get together all the information of every sort that will add to the quantity and value of the crops he raises, to be put in his hands, and this society must help me. Four years is not sufficient to more than begin this work, but it will leave a foundation for those who occupy the office after me to build thereon a noble structure.

The bill that has become a law giving the Commissioner of Agriculture the power to collect and disseminate information on all branches of agriculture and forestry will permit the publication of proceedings such as yours and it is by such means that I hope to reach the fruit growing class.

A report of the Treasurer was next read and approved.

The meeting place and date for the next annual meeting was left to the discretion and selection of the Executive Committee.

A committee to investigate the matter of having the Horticultural Society's work published was composed of Professors Garman and Mathews and M. F. Johnson. Society adjourned.

THE KENTUCKY STATE FAIR.

Under the Act of the Legislature 1906 which created the State Board of Agriculture, Forestry and Immigration, this department has held two State Fairs, both at the city of Louisville, September 1906 and September 1907.

The State Fair Act provided that the State Board was empowered to secure a location and establish a permanent State Fair, and in order to carry out this part of their duties they proceeded to advertise for propositions from the various cities of the State requesting that such inducements in the way of donations of land or money be offered to this Board to secure the permanent location of the State Fair.

Competition for the permanent Fair was very pronounced between the cities of Louisville and Lexington. The city of Lexington offered the Board to secure the Fair the sum of fifty thousand dollars while the city of Louisville made a proposition of one hundred and sixty-five thousand dollars. The Board assembled at the city of Frankfort on July the 14th, 1906 for the purpose of receiving bids for the permanent location of the Fair. Special trains were run from Lexington and also from Louisville and when the Board assembled a large delegation from each city was present. The merits and claims of each city were vigorously advocated and presented to the Board and when the vote was finally taken the Board decided to locate the Fair at the city of Louisville.

In 1906 a very successful fair was held and great interest manifested throughout the entire State. The Fair was held at Churchill Downs near the city of Louisville and as this location was considered only temporary, it necessitated the expenditure of a large amount of money on the buildings and grounds to prepare them for accommodating the numerous exhibits of live stock and agricultural products incident to holding a great Fair. After all of the bills were paid and the business closed it was found that we had made a profit of ten thousand, nine hundred and ninety dollars and eighty-six cents.

The next Fair was held September 16th to 21st inclusive, 1907 at Churchill Downs near the city of Louisville and this was considered to be the best Fair that had ever been held in the State. The weather was perfect and large crowds attended the exhibition. The exhibits in live stock and also in all other departments were far above the average, both in number of entries and the character of exhibits. There was a total of five thousand four hundred and seventy-nine entries in all the Departments, distributed as follows:

Horses	526
Mules	18
Jack Stock	58
Shorthorns	128
Herefords	87
Angus	74
Polled Durham	36
Red Polls	19
Jerseys	125
Holsteins	48
Ayrshires	25
Guernseys	38
Swine	447
Sheep	258
Poultry and Pigeons	864
Vegetables and Melons	440
Field Seed and Grain	370
Tobacco	116
Horticulture	552
Plants and Flowers	41
Woman's Department	1209

Every section of the State was well represented in the distribution of prize money and the exhibitors from more than one-third of the counties of the State carried back home the coveted ribbons.

The Commissioner of Agriculture offered as a special premium a handsome silver plate to cost \$150.00 cash to be awarded to the county securing the largest number of ribbons in all departments. On recapitulating it was found that Jefferson county had secured this handsome trophy, having taken 695 ribbons, Fayette county came second with 176 ribbons while Shelby county took third place,

having carried off 153 ties. There were thirteen other counties which received about twenty awards each.

It was found that during the six days one hundred and five thousand people visited the Fair, which exceeded last year's attendance by about forty thousand. Kentucky day held the record with about twenty-three thousand attendance, while Louisville day was a close second, showing about twenty-two thousand in attendance. Southern Indiana day was also worthy of notice, passing the twenty thousand mark. The opening day was devoted to school children, when over fourteen thousand children from the schools of Louisville attended the Fair.

The distribution of premium money at this Fair was fully up to the average of all previous fairs. The management distributed in premiums the sum of \$18,478.75.

The total receipts from all sources from the fair (exclusive of premiums) was \$45,368.36 and had the Fair been held on its own permanent grounds a large profit, no doubt, would have resulted, but owing to the fact that we were again forced to use temporary grounds for holding the Fair and that under the agreement we were obligated to restore the grounds to their former condition as near as practicable, it was found that this was an expensive proposition, which, coupled more liberal expenditures in the way of exploiting the Fair than had previously been done our profits were reduced compared to last year; results showing a profit of about four thousand dollars.

The management had the co-operation of the citizens of Louisville and the Fair was liberally supported.

Negotiations are now pending for the purchase of a permanent site near the city of Louisville with the one hundred and sixty-five thousand dollars donated by the citizens of Louisville, the city of Louisville and Jefferson county; and it is hoped that the State Fair will be domiciled in a permanent home before the Fair of 1908 is held. With proper management in the course of the next few years, Kentucky should have a State Fair surpassed by none in this country.

In conformity with the State Fair Law Chairman Vreeland submitted the following report to the State Auditor:

STATE FAIR, LOUISVILLE, KENTUCKY.

September 16 to 21, 1907.
Statement of Premiums Paid.

Receipts.

Received from Polled Durham Association..	182.67
" " American Hereford Association	300.00
Received from Polled Durham Association..	182.67
" " Shorthorn Association	570.39
" " State of Kentucky, Bureau of Agriculture	527.00
Received from Other Sources	1,898.69
	<hr/>
	\$18,478.75

Disbursements.

Paid Awards on Horses	\$ 4,678.00
" " " Beef Cattle	3,614.00
" " " Dairy Cattle	1,850.00
" " " Swine	1,502.00
" " " Sheep	1,013.00
" " " Poultry	674.00
" " " Vegetables and Melons..	331.00
" " " Field Seed and Grain	646.00
" " " Tobacco	715.00
" " " Horticulture	626.75
" " " Plants and Flowers.....	258.00
" " " Woman's Work	487.00
" " " Dogs	126.00
" " " Races	1,958.00
	<hr/>

\$18,478.75

See State Fair Premium Books for details on file in the office of the State Board of Agriculture, Forestry and Immigration.

HUBERT VREELAND,
Chairman.

**LAW REGULATING THE
STATE DEPARTMENT OF AGRICULTURE.**

The following laws governing the Department of Agriculture are published in order that the farmers of the State may get a clearer idea of the workings of the Department to the end that their co-operation may be secured in the upbuilding of Kentucky's agricultural interests:

KENTUCKY STATUTES.

Chapter 4.

AGRICULTURE, LABOR AND STATISTICS.

§ 31. BUREAU ESTABLISHED—COMMISSIONER—APPOINTMENT AND ELECTION. A Bureau of Agriculture, Labor and Statistics is established, and shall be under the management of an officer, who shall be known as the Commissioner of Agriculture, Labor and Statistics. In one thousand eight hundred and ninety-two there shall be appointed by the Governor, by and with the advice and consent of the Senate, a commissioner who shall hold his office until the first Monday in January, one thousand eight hundred and ninety-six, and until his successor has qualified, unless sooner removed by the Governor, who shall also have the power to fill a vacancy in the office occurring from any cause. At the general election held in November, one thousand eight hundred and ninety-five, and every four years thereafter, there shall be elected a commissioner, who shall enter upon the discharge of his duties on the first Monday in January after his election, and hold his office for four years, and until his successor is elected and qualified.

§ 32. COMMISSIONER'S OFFICE AT SEAT OF GOVERNMENT—DUTIES. The commissioner shall keep his office at the seat of government, and devote his entire time and attention to the duties of his office. Before entering upon his duties he shall take the oath of office and execute bond to the Commonwealth, with good sureties, worth at the time, jointly or severally, twenty-five thousand dollars, to be approved by the Governor, for the faithful discharge of the duties of his office; and shall receive an annual salary of twenty-five hundred dollars, payable at the same time the salary of the Governor is paid.

§ 33. PURPOSE OF BUREAU—DUTIES OF COMMISSIONER. The efforts of the bureau shall be directed to the promotion of agriculture, horticulture, manufactures, and to matters relating to labor and statistics; and the commissioner shall promote and encourage, as far as practicable, the organization of agricultural and horticultural societies and other associations in the several counties, and ascertain the agricultural, horticultural, mechanical, commercial and educational condition of every county, giving, in detail, the quantity and quality of land under cultivation; the kinds, amounts and value of the annual field crops; the annual production of orchards, gardens, dairies and mines; the quantity and value of domestic manufacturers; the kinds, value and increase of live stock; the annual products of mechanical industry and skill; the character of the labor employed in the mines, factories and cultivation of the soil, and the prices paid therefor; the value of exports and imports; the number of miles of railroads, turnpikes, navigable streams and post-offices, and the name of same in each county; how and by whom turnpikes and other public roads are operated and kept in repair; the name, location and population of cities, towns and villages; the number and value of school-houses and churches; the names, capital and purpose of charitable institutions together with such other vital, social, physical and political statistics as he may deem proper and expedient.

§ 34. AUDITOR AND OFFICERS REQUIRED TO FURNISH INFORMATION.—The Auditor of Public Accounts, assessors of the several counties, and all other officers of the State and counties, shall furnish the commissioner with such information within their power as he may require in regard to the matters connected with the Bureau; and as a further means of procuring informa-

tion, the commissioner shall put himself in communication with the different agricultural, horticultural and labor societies, manufacturing and mining companies, and such other organizations or persons, in or out of the State, as he may deem proper.

§ 35. COMMISSIONER TO FURNISH REPORTS AND STATEMENTS. The commissioner shall furnish to the publishers of newspapers of the State, who will publish the same free of charge, a condensed monthly report of the breadth of planting and condition of the growing crops, and such other information as he may deem expedient and proper, and shall also issue monthly statements of the crop prospect throughout the State; and also all other obtainable information as to the general crop prospects throughout the United States and all foreign countries, whose products come in competition with the products of this State.

§ 36. COMMISSIONERS TO REPORT TO LEGISLATURE—PAMPHLETS IN ENGLISH AND GERMAN LANGUAGES. He shall, before the assembling of each regular session of the General Assembly, compile a report giving a general review of the agricultural, horticultural, mineral and industrial resources of the State, with brief notices of each county, and the character of the public roads in the several counties, and how and by whom operated and kept in repair; the character of labor generally employed in mines, factories and the cultivation of the soil, and the prices paid therefor, and such other information as he is required to gather, and shall have a sufficient number, not exceeding two thousand, printed for the use of the General Assembly and for general distribution. He shall prepare, as soon as he may be possessed of the proper information, a condensed statement of the present condition and capacity of the State as regards its agricultural, horticultural and mineral resources; its manufacturing and domestic arts; the average price of land and labor in its different sections; its traveling exporting and educational facilities; a brief view of its climate; its geographical position and general topography, and other suitable subjects designed to induce immigration to this State, which statement, in the form of a report, when presented to the Governor and approved by him, the commissioner may cause to be printed in cheap pamphlet form, in the English and German languages, and distributed free through immigration societies or otherwise, as he may deem best to promote immigration into this State.

§39. EXPENDITURES FOR PREMIUMS AND SEED.

The commissioner is authorized to expend such sums out of the appropriation made for the bureau as he may deem necessary in the payment of such premiums as he may offer to encourage the agricultural industry of the State; and may expend such portion thereof as, in his judgment, is prudent and necessary in the distribution of any seeds that the United States Government may desire to introduce into this State, and in the purchase, importation and exchange of any seeds that he may deem of value to the agricultural interests of the State, and in the analyzation of the soils in the different parts of the State in the interests of agriculture; but it is not obligatory upon him to expend any portion of the appropriation unless, in his judgment, it is necessary to do so in furtherance of the objects for which the bureau is designed.

§40. MONTHLY STATEMENT OF EXPENSES—APPROVAL BY GOVERNOR. He shall make out a monthly itemized account of the expenses of his office, including the manner and amount of expenditures made by him, and submit the same to the Governor for his approval, and upon his approval, he shall authorize the Auditor of Public Accounts to draw his warrant on the Treasurer for the amount.

§41. CLERK AND SALARY. The commissioner is allowed a clerk or clerks, to be selected by himself, the salary of whom shall not exceed in the aggregate twelve hundred dollars per annum.

§42. APPROPRIATION TO COVER EXPENSES. The sum of thirteen thousand dollars is hereby annually appropriated, out of any funds in the hands of the Treasurer not otherwise appropriated, for the support and maintenance of this bureau. Said amount shall cover all expenses of every kind growing out of this act, including commissioner's salary and clerk's pay, and all expenses connected with and growing out of this department of the State Government.

ACT CREATING THE STATE BOARD OF AGRICULTURE, FORESTRY AND IMMIGRATION.

§ 2. That there be, and is hereby, created a State Board of Agriculture, Forestry and Immigration to consist of nine members, namely, the Commissioners of Agriculture, Labor and Statistics, ex-officio chairman; the Director of the Kentucky Experiment Station, at Lexington, Ky., an ex-officio member, and one intelligent citizen from each of the appellate court districts in the State, to be selected and hold office as hereinafter provided; said members from the appellate districts to be experienced and practical farmers.

§ 3. Upon the passage of this act, the Governor shall appoint, first, the Director of the Experiment Station to serve until the first of January, one thousand nine hundred and eight, and shall re-appoint him every four years thereafter; Provided that should the Director of the Experiment Station resign or be removed from his office of director of said Station, this fact shall terminate his membership on the said Board, and the Governor shall appoint his successor as Director of the Experiment Station as his successor on said Board; and, second, seven members, one from each appellate court district, two of whom shall serve until the first day of March, one thousand nine hundred and seven; two of whom shall serve until the first day of March, one thousand nine hundred and eight, and two of whom shall serve until the first day of March, one thousand nine hundred and nine, and one of whom shall serve until the first day of March, one thousand nine hundred and ten, or until their successors are elected and qualified, as provided hereinafter.

§ 4. At their first meeting, said appointees shall determine by lot the two whose term of office shall expire in one thousand nine hundred and seven the two whose term of office shall expire in one thousand nine hundred and nine; and the one whose term of office shall expire, in one thousand nine hundred and ten. The members of this board shall meet at Frankfort at least once every two months,

or at such other place as they may agree upon, to consider the general agricultural, horticultural, forestry and other industrial interests of the State and to make the necessary steps for carrying out the provisions of this act. The Commissioner, as chairman of the board, may call their meetings and shall have the power to adjourn both regular and call meetings. Five members shall constitute a quorum and are authorized to transact business. The moneys expended by the said board shall have the approval of a majority of the board and every voucher set forth for what the money was paid.

§ 5. It shall be the duty of the Commissioner of Agriculture, Labor and Statistics, with the approval of said Board, to see that a farmers' and industrial institute, of at least two days duration, is held in each county of the State annually. The institute shall be advertised at least one month before convening, and an effort shall be made to interest and instruct the farmers in the most profitable and approved methods in agriculture and horticulture and awaken an interest in the industrial development of the State generally. This institute shall be used as a means of gathering the people together, of ascertaining their names and post-offices, learning their needs, and giving them information in agriculture and other industrial lines, and of distributing literature upon these subjects. The county institute shall select one or more crop reporters from each magisterial district in the county, to serve for one year without pay, whose duty shall be to report to the Commissioner of Agriculture, Labor and Statistics monthly the acreage and condition of the crops and such other information as he, under the law, may ask them.

Each county institute shall elect one or more delegates to the State Institute, as provided for in the next section of this act.

§ 6. Said Commissioner shall cause to be held at Frankfort, or some other convenient place, as said board may agree upon, between the first day of January and the first day of March of each year, a State Industrial Institute for the farmers and others interested in the industrial development of the State, of at least three days duration, at which only county delegates shall be entitled to vote, each county having one vote. Said Commissioner shall be furnished the name and postoffice address of each county delegate by the secre-

tary of the county institute, and each delegate shall be notified of the time and place of holding the State Institute at least ten days before same shall convene.

§ 7. The first State institute shall be held in one thousand nine hundred and seven at which two citizens shall be elected from the appellate court districts by delegates of these respective districts as members of the State Board of Agriculture, Forestry and Immigration for a period of four years, to fill the vacancies occurring by the expiration of the term of office of the two members appointed by the Governor to serve until March first, one thousand nine hundred and seven, and each year thereafter the delegates to the State institute from the respective appellate districts shall elect member of the board for a term of four years to fill the vacancy which shall occur on the first of March of the same year. The Governor shall appoint a member to fill any vacancies that may occur at any time, but said member shall only serve until the next State Institute, when the delegates from that district shall elect as before to fill out the unexpired term.

The Governor, for just cause and for good of agriculture and other interests of the State, may remove any member of the board, but he must state the reasons therefor in writing, and it must be approved by a majority of the board.

§ 8. This board, in addition to the duties specified, shall act as an advisory board to the Commissioner of Agriculture, Labor and Statistics and shall aid him in the distribution of seed, as provided by law, in the collection of information concerning crops, and in the promulgation of industrial information generally.

§ 9. Said Board shall act as a Forestry Commission for the State and may expend out of the appropriation for their use as much as two thousand dollars each year for the purpose of furthering the forestry interests of the State, or said board is authorized to arrange and contract with the Forestry Department of the United States Government, under such terms as they may deem advantageous to the State, by which they may expend a sum not exceeding said two thousand dollars of the amount herein appropriated to be used in co-operative work with the Forestry Department of the

United States Government, provided a like sum is furnished for said purpose by said Government; but the use of this amount or any part of it for this purpose is not obligatory upon the board, unless, in their judgment, the State should profit thereby.

§ 10. Said Board shall act as an immigration committee, and shall collect information as to wages paid for labor in the different sections of the State, and the kind of labor needed, and shall cause the same to be printed and distributed. It shall also ascertain the class of immigrants coming to this State, and shall collect statistics showing as nearly as possible the number of persons and their destination emigrating from the State, and the causes leading thereto. For the purposes specified in this section they may expend as much as two thousand dollars annually of the amount appropriated in this act, but it is not obligatory upon them to expend any portion of the appropriation, unless, in their judgment, it is necessary to do so in the furtherance of the welfare of the State.

§ 11. The Commissioner of Agriculture, Labor and Statistics may appoint a clerk and stenographers of the board, subject to the approval of said board. The clerk shall be an able, well qualified man for the place, and shall give his entire time to the services of the State. He may act as an Assistant Commissioner or as an instructor at the county institutes, but shall receive no additional pay therefor, except his actual expenses, or perform other duties assigned him by the Commissioner. The Commissioner shall collect each year a report of the work done by the State and county institutes, or such part of the work as he may deem valuable information for the citizens. Twenty-five thousand copies of his institute report shall be published annually in book form and shall be distributed free as nearly as possible in proportion to the agricultural population of the several counties, and the board is hereby authorized to have same printed.

The board may expend as much as three thousand dollars per annum for salaries of clerks and stenographers, which sum or any part thereof shall be paid out of the appropriation made for the use of this board.

§ 12. The members of this board shall receive five dollars per day and actual traveling expenses while attending meetings of the

board, but the total number of days the board may be in session shall not exceed thirty per year.

§13. For the purpose of carrying out the provisions of this act the sum of twenty thousand dollars per annum in addition to the amount already appropriated for the benefit of the Bureau of Agriculture, Labor and Statistics, is hereby appropriated out of any money in the Treasury not otherwise appropriated for the use of the said Bureau of Agriculture, Labor and Statistics. The clerk of the board shall certify to all expenditures of the board to the chairman, who, in turn, shall certify them to the Governor for his approval, and upon his approval he shall authorize the Auditor of Public Accounts to draw his warrant upon the Treasurer for the amount.

§14. All laws or parts of laws in conflict with this act are, to the extent of such conflict, hereby repealed.

(Approved March 21, 1906.)

KENTUCKY STATUTES, CHAPTER 110.

ROADS AND PASSWAYS.

ARTICLE I.

(Act March 10, 1894.)

PUBLIC ROADS.

Sec. 4287. **Public roads—what are.** All public roads on which the several county courts have heretofore appointed surveyors to work the same and allotted lands therefor, which have not been vacated according to law, are hereby declared public roads, without regard to any informality in the orders of the county court by which they were established.

Sec. 4288. **Places to which road may be opened.** Applications for opening roads shall be allowed only for the convenience of traveling to the county court house, to a public warehouse, an established town, postoffice, landing, ferry, mill, lead or iron works, the seat of government, salt works, house of public worship, public cemetery, poor house, coal or iron banks, to a lock or dam, to an oil well, copper or other mines, a stone quarry, sand bank, to any navigable river, or to a convenient depot on a railroad. (And schoolhouses, sec. 4439.)

Sec. 4289. **Application to open, change or discontinue or erect gates.** All applications to have a new road opened or a former one changed or discontinued, or to have the privilege of erecting gates across any such road, shall be by petition to the county court, signed by at least five land-owners of the county, which petition shall set forth, in writing, a description of the road, and what part thereof is to be altered or vacated. If for a new road, the names of the owners and tenants of lands, if known, and if not known it shall be so stated, over which the road is to pass, the points at or near which it is to commence, its general course, and the place at or near where it is to terminate, and if to erect gates, the place proposed for that purpose.

Sec. 4290. **Notice of application.** Previous to the filing of any petition mentioned in the preceding section notice thereof shall be given by posting written or printed advertisements in at least five of the most public places in the district or districts in which said road shall be located, for at least twenty days prior to the term of court at which such petition is to be presented, which notice shall state the time when such petition is to be pre-

sented, and the substance thereof, and a copy thereof shall be filed with the petition.

Sec. 4291. Commissioners to assess damages—appointment—temporary roads. When the petition is filed the county court, being satisfied that proper notice has been given according to the provisions of the preceding section, shall appoint three impartial housekeepers of the county as commissioners to assess damages the owner or owners, or tenants, if any, may be entitled to receive, who shall be sworn to faithfully and impartially discharge their duties under the law: Provided, That in cases of roadbeds or a portion of same washing or slipping away, or in cases of extreme emergency, and when in his judgment the conditions warrant it, the county judge may immediately open and have surveyed a road or passway to be temporarily used while the commissioners, as provided by law, are acting or while the matter is pending in the court to establish a permanent road or passway, and said commissioners shall assess the damage for said temporary road or use of same, and the same proceedings be had to recover same as in said recovery in regard to other roads, and the compensation to land-owners and tenants be ascertained and collected as in the establishment of new roads, and the county judge is empowered to agree with land-owners and tenants as to compensation. (Section as amended by act of March 22, 1902.)

Sec. 4292. Commissioners—duty of—damages, how estimated. It shall be the duty of said commissioners to view the ground along which the road is proposed to be conducted; to view the old road and new route, if any alteration in the road is proposed; if a discontinuance, then to view that road; and if the petition be to erect gates across a road, then to view the place proposed for that purpose. The commissioners may examine other routes than that set forth in the petition, and as near thereto as, in their opinion, a good road can be made at reasonable expense, taking into consideration the ground, convenience and inconvenience, and the expense which will result to individuals, as well as the public if such roads shall be established or altered as prayed for, and may report in favor of that which they prefer, with their reasons for the preference. Said commissioners shall determine and assess what will be a just compensation to each owner and tenant, if any, for the land proposed to be taken, and the additional fencing which will be thereby rendered necessary, and the value thereof, and the damage, if any, to the residue of the tracts beyond the consequential benefits, which will be derived to such residue from the road. If a person has only an estate for life or years in such land, and the remainder in fee belongs to another, the commissioners shall apportion the damages between them.

Sec. 4293. Report of Commissioner—surveyor may be directed to attend. Said commissioners shall return a report, in writing signed by them, to the court, stating the conveniences and inconveniences which will result, as well to individuals as to the public, from the opening of such road, the

alteration or discontinuance of a road, or the erection of gates across a road. It shall state the commencement and termination, courses and distances of such proposed road or alteration, so that the same can readily be found and located; the value of the land sought to be appropriated for the establishment of such road or alteration, and the amount of damages, if any, to whom, which by them have been assessed; the names of the owners and tenants, if any, and whether the owners are non-residents of the State, infants, of unsound mind, or married women; and it shall also state their opinion in favor of or against the establishment, alteration or discontinuance of such road, or the erection of gates across a road, as the case may be. The court shall, if requested, direct the surveyor of the county to attend the commissioners, and make out and return a map or diagram of the routes viewed, and to report such other facts touching the matter as either party may require.

Sec. 4294. Process against owners—dismissal of application. Upon the report of the commissioners on an application to establish or alter a road, the court shall issue process against the owners and tenants of the lands over which said report show the proposed road to pass, shows cause why the said report should not be confirmed and shall make such orders as to non-residents and persons under disability as are required by the Civil Code of Practice in action against them in the circuit court; but if the court shall be of the opinion that the proposed road or alteration is not of sufficient public utility for the county to pay the compensation and damages assessed as aforesaid, and the petitioners refuse to pay the compensation and damages, then the proceedings shall be dismissed at the cost of the applicant.

Sec. 4295. Judgment if no exceptions. At the first regular term of the county court, after the owner and tenants shall have been summoned the length of time prescribed by the Civil Code of Practice before an answer is required, no exceptions having been filed to said report by either party, it shall be the duty of the court, from the report and other evidence, if any, to determine whether the road shall be established or altered as recommended by the commissioners. (See, further, sec. 4299.)

Sec. 4296. Trial if exceptions filed—assessment of damages—judgment. When exceptions shall be filed by either party, the court shall, unless the parties agree that the court may try such issues, forthwith cause a jury to be impaneled to try the issue of facts made by the exceptions, and each juror shall be allowed one dollar per day for his services, to be taxed as costs. In assessing the compensation and damages, the jury shall be governed by the rule prescribed in section 4292 of this article, and upon request of either party may be sent by the court in charge of the sheriff to view the lands. If sufficient cause be not shown for setting aside the verdict, the court shall upon the report, verdict and other evidence, if any, determine whether the road shall be established or altered, as recommended in said report.

Sec. 4297. Discontinuing road or erecting gates—proceedings—repair or

removal of gates. At the first regular term of the county court after the filing of the report of the commissioners on an application to discontinue a road or erect gates across a road, whether exceptions have been filed thereto or not, the court shall, upon the report and other evidence, if any, determine whether the road shall or shall not be discontinued, or whether gates may or may not be erected across a road; and if the decision be in favor of erecting gates, the court shall fix the site of such gates, and the description of gate to be erected, which, in all cases, shall be done at the cost of the applicants. The county court may, after the occupant of the premises upon which gates shall be erected across a road has had ten days' previous notice of the proceeding, order the county supervisor of roads to have the gates repaired, removed or abolished (if the public good requires it) at the expense of the occupier of the land; but the order shall allow the occupant reasonable time to repair, remove or abolish the gates, and to remove or change his fences so as not to endanger the crop or other property of the occupant.

Sec. 4298. Gates—cost of repair or removal to be paid by owner.—If the occupant shall fail to repair, alter or abolish the gates as ordered by the court, and the same shall be done by the supervisor under the provisions of the preceding section, and the occupant shall, on demand, refuse to pay the expense thereof, the supervisor of the road shall report the facts to the county court, which shall thereupon issue a summons, requiring such occupant to show cause, if he can, at the first term of said court, beginning not less than ten days after the service of said summons, why judgment shall not be rendered against him for such expenses and costs; if said occupant does not answer, the court shall render judgment for said expenses and costs, and if he answers the court shall hear the evidence and determine the matter.

Sec. 4299. Damages and costs—who shall pay. The court may open or alter a road on condition that all or a part of the sum required to be paid to the owner and tenant, and the cost of procedure, shall be paid by the applicants, or on condition that the applicants wholly or in part open or alter the road; but if the court be of opinion that the sums or sums and the cost of the proceedings shall be paid by the county, it shall order the same to be paid to the person or persons entitled thereto.

Sec. 4300. Opening or alteration of road after judgment. After any such road or alteration thereof has been established, the court shall cause an order to be issued, directing said road to be opened or altered, as the case may be, in conformity to the commissioners report. Said order shall be directed to the county supervisor of roads, if there be one, if not, then to the overseer of the roads for the district in which said road, or the greater part thereof, is located.

Sec. 4301. Places where road shall not be established—widening of road. No road shall be ordered to be opened or altered through any burying-ground or dwelling-house, yard and lawn attached, or orchard,

without the consent of the owner. The county court may widen roads already established, not to exceed sixty feet in width. Upon written information under oath of the supervisor, or of any two citizens of the county, being filed in the county court at any regular term, to the effect that any public road in said county, or any part of such road, is not of sufficient width for the convenience of public travel, the court shall appoint three suitable persons, one of whom shall be a competent surveyor, to view the same, who shall report in writing, under oath, to the court at its next term, the present width of said road at the point or points designated, the character of the ground over which it passes, and the land adjacent thereto, and the purposes for which said adjacent land is used, and whether, in their opinion, the convenience of public travel demands that said roads be made wider, and if so, how much wider, and the distance of such increased width. They shall also report how much of the adjacent land will be taken by the proposed change, its reasonable value, to whom it belongs and to what extent the change will injure or benefit the owners of said land, and they shall return with their report a map of the ground viewed, showing the proposed change. Upon the report of the reviewers like proceedings shall be had as are now had in applications for opening roads. The court may hear oral testimony, and if, upon the whole case, the court shall be of opinion that the road should be widened, it shall order the supervisor of roads, or, if no supervisor, the overseer of the precinct, to have the same done in manner and form as prescribed by the court. In carrying out the provisions of this section it shall be lawful, when unavoidably necessary, to embrace portions of any yard, lot, park or orchard in the increased width of any road, but not of graveyards, without consent of corporation or parties having dead buried therein, and then upon proper provision for decent re-interment. In every case arising under this section the person whose land is taken, shall, if he requires it, be compensated therefor; and if no agreement can be made by and between him and the court as to the amount of such compensation, the same shall be ascertained and fixed in the manner hereinbefore prescribed for condemning land for road purposes.

Sec. 4302. Turnpike may be turned over to county. The owners of the stock of any turnpike, plank, gravel or other road may, at any time, surrender to the fiscal court of the county in which the road is situated the right to use, occupy, repair and control the same as a public road, and thereupon the said court may immediately take charge of said road, which shall become a part of the public road system of the county.

Sec. 4303. Appeals to circuit court and court of appeals—how tried. No appeal shall lie to the court of appeals from the decision of a county court ordering a new road to be opened, or refusing such order or ordering an alteration in a road, or refusing the same, or discontinuing a road, or refusing such discontinuance, allowing gates to be erected across a road, or refusing to allow the same or abolishing such gates. But in all such cases the party aggrieved may prosecute an appeal within sixty days by executing

bond as required in other cases in the circuit court of the county, and the appeal shall be tried de novo; and from the decision of the circuit court either party may prosecute an appeal to the court of appeals, and the latter court shall have the jurisdiction only of matters of law arising on the record of such cases.

Sec. 4304. Roads leading to city—opening of. Where an application is made to open a road for the convenience of traveling to an established town, and the applicants are willing to pay the proprietors a fair compensation for the land to be condemned, and the cost of opening and the cost of procedure, it shall be deemed to be prima facie evidence of the necessity of the proposed road for the convenience of travel that it lies in the right line extended of a street of a city; but this rule shall apply only to an extension of not exceeding two miles beyond the limits of a city that, by the last preceding Federal census, had over fifty thousand inhabitants and to an extension not exceeding one mile where the city had less than that number. At the opinion of the applicants, a road made under this section may be made of the full width of the street of which it is an extension. Nothing in this section shall prevent a county court from opening a road along the extension of a city street at the expense of the county, in whole or in part, in any case where it would have done so but for the provisions of this section

Sec. 4305. Ditches and branches for benefit of road—how paid for. That the judge of the county court shall, on information in writing by the supervisor or any overseer that a ditch is needed through the land of any person, or that a ditch, branch or creek through any person's land needs cleaning out, straightening, widening or opening in order to carry off the water from any part of the public road, and that the water can not be carried off otherwise, notify such person, in writing, to have the same done; and upon his failure, after reasonable time, being reported by the supervisor or overseer, the judge shall issue a summons against such person citing him or them to appear at the next regular term of his court, which shall meet not less than five days thereafter, to show cause why the same shall not be done by the supervisor, overseer or contractor and the cost thereof laid as a tax upon his or their property as other county taxes; and upon failure of such person or persons to show cause, the court shall order said work to be done, giving specific directions therefor; and the cost thereof shall be laid and collected as a tax on the property of said party or parties, and the work shall be paid for out of the county levy. But in all such cases the party or parties affected shall have due compensation for property taken and damages sustained to be ascertained in the same manner and by the same proceedings as in fixing damages and compensation for property, and so forth, in opening roads

Sec. 4305A. Quarry—land for may be obtained. That any county in this State in which any of the public roads thereof have been macadamized, and are being maintained by taxation, may acquire title to one acre of land

adjacent or near each mile of such road for the purpose of obtaining material with which to repair said road. And may also acquire the land necessary for a passway to and from said one acre of land.

When the land necessary for a quarry and the entrance thereto can not be obtained by private agreement with the owner, the county may have the same condemned, as provided for the condemnation of lands for railroads, And when land necessary for a public highway can not be obtained by private agreement with the owner, the county may have the same condemned as provided for the condemnation of lands for railroads. (This section is an act of March 24, 1902.)

Sec. 4306. Fiscal courts to control roads—how worked. The fiscal court of each county shall have general charge and supervision of the public roads and bridges therein, and shall prescribe necessary rules and regulation for repairing and keeping the same in order, and for the proper management of all roads and bridges in said county under and subject to the provisions of this act. The public roads shall be maintained, either by taxation or by hands allotted to work thereon [or both] in the discretion of the fiscal court of the respective counties, as hereinafter provided. (Words in brackets inserted by act of March 16, 1898.)

Sec. 4307. Tax may be levied—limit and collection of. The fiscal court shall have full power and authority to levy an ad valorem tax for road and bridge purposes of not exceeding twenty-five cents per year on each one hundred dollars' worth of property assessed for State and county taxation, and also a per capita tax of not exceeding one dollar on each male citizen of the county, liable to work on roads, between eighteen and fifty years of age. Said tax to be collected in the same manner, by the same officer, and under the same obligations, as othr county revenue is collected, and the fund shall be designated as the "Road and Bridge Fund."

Sec. 4308. Persons required to work roads—hands, how paid—penalty for failing to work. The fiscal court of any county may require all able-bodied male citizens of the county, over eighteen and under fifty years of age, except licensed ministers of the Gospel and citizens of incorporated towns and cities, to provide themselves with necessary tools and implements, and to work on the public roads of the county not exceeding two days in a week, and six days in each year, and in cases of unusual emergency, the overseers may require the road-hands to work a greater number of days in any week or year. In cases where the fiscal court shall pay the road-hands for their work, the said court may require them to work more than six days in the year. Any such citizen may furnish an able-bodied substitute to work in his place. A day's work on the road for such hands shall be eight hours. The fiscal court, in its decretion, may pay the hands so ordered to work on the roads a reasonable compensation per day for all or any part of their labor. The amount due to each hand shall be certified by the overseer to the fiscal court, which court shall direct the sheriff to settle all such claims in the payment of taxes, when any taxes are due by the person to whom

allowed; and if no taxes are due, or if the claim amounts to more than the taxes due, the sheriff shall pay the persons holding such claim, taking their receipt for the same, which shall be his voucher in his settlement. Any one assigned to work on a public road who shall, without good cause, fail to appear with proper implements, and do good work thereon, after having been notified for two days by the officer having supervision of the road, or by some one authorized in writing by him to give said notice shall on trial and conviction before a justice of the peace, or the county judge, be fined for each day he so fails to work two dollars and fifty cents. All such fines, when collected, shall be used for road purposes, and upon failure to pay, a *capias pro fine* may issue.

Sec. 4309. Road precincts—overseers. The judge of each county court shall at the first regular term of his court after this act takes effect divide his county into road precincts, shall fix boundaries for the same, and shall allot all the able-bodied male citizens within said boundary, between the ages of eighteen and fifty years, to work on the roads in their respective precincts. For each precinct he shall appoint an overseer, a resident of the precinct, who shall hold his office for two years from the day of his appointment and until his successor shall be appointed, unless sooner removed by the county court. And the county judge shall fill all vacancies that may occur in said office.

Sec. 4310. Appointment of overseers—penalties. The appointment of overseers shall be, by order, entered in the order-book of the court; and the clerk of said court shall, within ten days after the entry aforesaid, deliver two copies of such order for each overseer to the sheriff, a constable, town marshal or the jailer of said county, by whom one copy shall be delivered to the overseer named therein, within fifteen days thereafter. Said order shall contain a description of the precinct allotted to each overseer. The sheriff or other officer delivering such order shall return the other copy, with his indorsement of service, to the county court. For each failure of said clerk, sheriff or other officer to discharge the duties herein required, such officer shall be fined five dollars. The said overseers shall be exempt from service on juries and from poll-tax for road and bridge purposes; and for failure to perform the duties herein required of them shall, for each offense, be fined from five to fifteen dollars. The fines imposed under this section to be recovered on warrants issued by and tried before the judge of the quarterly court.

Sec. 4311. Duty and powers of overseers. The duties of the overseers shall be as follows, to-wit: In counties wherein the roads are worked by hands allotted as hereinbefore provided, the overseers shall have charge of the roads and bridges in their respective precincts, construct bridges and work the roads in the manner directed by the fiscal court, shall summons the hands to work the roads in their precincts; superintend and direct said work and keep the roads and bridges thereon free of obstructions and in good condition for travel; and may employ the necessary wagons, plows,

scrapers, teams, and such additional implements as may be needed to work said road; and shall report to the nearest justice of the peace or to the county judge any damage, injury or obstruction caused by any one to said road and do good work in obedience to his summons, and the number and length of time of such failure, and he shall also report promptly to the county judge any damage, injury or obstruction caused by any one of said road or the bridges thereon. And when the fiscal court has provided for paying hands for working on the roads, it shall be the duty of the overseers to report to the fiscal court the number of hands and the time worked by each who have worked on the roads of their respective precincts, and to furnish to each hand a certificate of the time so worked by him.

Sec. 4312. Duty of overseers where roads are worked by taxation. In counties wherein the roads are worked by taxation, it shall be the duty of the overseers to assist the supervisor, if there be one, in looking after the roads in their respective precincts and seeing that they are kept in good repair; to report promptly to the supervisor all obstructions to travel thereon and to report to the county judge all failures of the contractors to comply with their contracts, and all violations or neglect of duty of the supervisor with regard to said roads. If there be no supervisor, they shall discharge such duties and have such powers with regard to the roads and bridges in their respective precincts, as may be conferred and imposed upon them by the fiscal or the county court.

Sec. 4313. Supervisor—appointment—qualifications—term—vacancy. The fiscal court of any county wherein the roads are worked by taxation may, at its first regular term after the taking effect of this act, and every two years thereafter, appoint a supervisor of roads in and for its county, who shall be a citizen of the county, and who shall hold his office for the term of two years, and until his successor is appointed and qualified, unless sooner removed by the fiscal court. Any vacancy in the office of supervisor shall be filled by the fiscal court at a regular term, and it shall be the duty of the county judge in the event of such vacancy, immediately to fill the same till the next regular term of the fiscal court.

Sec. 4314. Bond and oath of supervisor—action against. The supervisor shall, at the next regular term of the county court after his appointment, execute bond to the Commonwealth for the benefit of the county, with sureties to be approved by the court, in double the amount of the bridge and road funds, and shall take oath for the faithful discharge of his duties. The taking of said oath and the execution of said bond shall be noted on the order-book of the court. The bond shall be recorded in the order-book, and the original carefully preserved on file in the office of the clerk of said court. Copies of the said bond shall be competent as evidence in any suit, proceeding or prosecution against the supervisor and his sureties, or either of them, for breach of his said covenant. The said

county court, or any person aggrieved, may, from time to time, institute against the supervisor and his sureties on said bond (or against his or their personal representatives), in any court of competent jurisdiction for any loss or damage sustained by the acts or omissions of the supervisor. The said bond shall not be void or discharged on the first or any other recovery, nor until all persons aggrieved shall be satisfied.

Sec. 4315. Supervisor—duty and powers of—letting roads to contract—fiscal court—county judge. In counties wherein roads are worked by taxation, it shall be the duty of the supervisor at the court-house door in his county, on the first Monday in March in each year, after twenty days' written or printed notice posted at each voting place in the county, to let out to the lowest and best bidder, who shall give bond with surety, approved by the supervisor, the working and keeping in repair of all the roads in said county, for the term of not less than one year nor more than two years thereafter, the said work to be done as prescribed in the bonds of contractors; to let out at such times as needed, and on reasonable (printed or written) notice, the building and repairing of all such bridges and culverts as are now embraced in the contracts for working roads; to superintend the opening, widening and changing of roads; to receive new roads and alterations in roads, and to report same to the county court when, and in the manner directed by the county court, and to see that all roads and bridges are kept clear of obstructions, and at all times in good order for travel and transportation: Provided, That for the purposes enumerated the fund raised under this act, and which may be otherwise raised by the levy court, shall be sufficient; and if not sufficient, then it is to be used at such places and for such purposes as the supervisor, under the general direction of said court may deem proper; and the court, in giving such directions, shall have due regard to the public good, and to the wants of the different parts of the county. The said court shall provide a period in each year within which the levying and grading of roads shall be done, but said period shall not extend beyond the first of September in any year. It shall be the duty of the supervisor to report in writing to the judge of the county court all failures of contractors to comply with their contracts in regard to roads or bridges, and to appear and prosecute in all proceedings against such delinquents so reported by him. The supervisor, with the consent of the county judge, may designate certain roads or parts of roads that are not to be let out as hereinbefore required, but which are to be worked and kept in repair either by special contracts privately made, or by hands and teams hired by him, or by delinquent taxpayers, or by persons sentenced to labor or who, by law, may be liable to work out fines imposed by juries or courts. But it shall be the duty of the supervisor to return to the county court, at its September term in each year, a descriptive list of such roads which shall be recorded in its order-book, and also to report in writing all hands and teams hired, and amounts paid for same, and the length of time and where employed; and also a similar report of the names of delinquents who work, the places where, and

the length of time and names of persons working out fines or sentences on roads. And it shall be the further duty of the supervisor to supervise said work, and to employ competent persons to oversee; and he may, if necessary, put balls and chains on convicts to prevent their escape. Such overseers and persons hired as herein provided are to be paid out of the road fund or county levy, in the discretion of the fiscal court. Delinquent taxpayers shall be put on roads convenient to their places of residence, and shall be allowed credit at the rate of one dollar for each full day's work: Provided, however, That the fiscal court of any county wherein roads are worked by taxation may, instead of appointing a supervisor, authorize the county judge to so let out the working of the roads and the building or repairing bridges, and to take and approve the bonds hereinbefore required. In such cases the other powers herein conferred and duties imposed upon the supervisor shall be exercised and discharged by the road overseers in their respective precincts: And, provided, further, That the county court may, in its discretion, appoint a special commissioner to receive new roads and alterations in roads: And, provided, further, That in cases where, under the provisions of this section, the supervisor, with the consent of the county judge, is authorized to designate certain roads that are not to be let out as hereinbefore required, but which are to be worked and kept in repair by special contracts by hired hands, by delinquent taxpayers or persons sentenced to labor, the county judge (there being no supervisor in the county) shall have authority and it shall be his duty to do everything in relation thereto that the supervisor could have done without his consent, and may appoint some competent person or persons to superintend and carry on said work.

Sec. 4316. **Contractor's bond—penalty for breach of.** The contractor's bond required by the preceding section shall be given to the Commonwealth for the benefit of the county, with good surety, to be approved and attested by the supervisor or judge in at least double the amount of the value of the work to be done, and conditioned for the faithful performance of the work within the prescribed time, and shall be returned by the supervisor or judge to the county court at its next ensuing term, which fact shall be noted of record, and the bonds kept by the clerk of the court in his office vault, labeled and marked "contractors" bonds. Similar bonds shall be taken for the work let at private contract, and shall be returned and kept as the other contractors' bonds; certified copies of said bonds shall be competent as evidence. For any breach of a contractor's bond, he shall be liable to a fine of from ten dollars to one hundred dollars, and to action for damages by all parties aggrieved thereby. Upon the filing of the report of the supervisor or overseer, that any contractor has failed to comply with his contract, or upon information or oath of any person, or on his own knowledge, that any road or bridge, embraced in said contract, is out of repair, the judge of the quarterly court of said county shall forthwith issue from and make returnable to his court a warrant, in the name of the Commonwealth, against the delinquent contractor, and

when executed, proceed forthwith to try the same as other Commonwealth warrants are tried. The sureties of all delinquent road and bridge contractors shall be liable for all fines imposed and judgment for damages rendered against their principal under this act. All parties proceeded against, as hereinbefore provided, shall be entitled to a trial by a jury.

Sec. 4317. Supervisor—penalty for failure to do duty. For any violation or failure, without good cause, to discharge any duty prescribed by this act, the supervisor shall be deemed guilty of a misdemeanor, and shall, on conviction, be fined therefor not less than ten nor more than one hundred dollars, to be recovered by indictment in the circuit court or by warrant in the name of the Commonwealth of Kentucky, to be issued by and returnable before the county judge of the county, sitting as judge of the quarterly court; and it shall be the duty of said judge to issue such warrant upon his own knowledge or upon information of another on oath. On the trial of such warrant the supervisor shall be entitled to a jury if demanded. (Section as amended by act of March 22, 1902.)

Sec. 4318. Tools and implements to be furnished by supervisor—reports concerning. That the supervisor or overseer shall, on the order of the county judge entered of record, hire wagons, plows, scrapers and teams, and procure forage for same, and either hire or purchase for the county such tools and implements as may be necessary and suitable to perform the work, which he may have done by hired hands, delinquents or convicts. He shall be responsible on his bond for the preservation and safe-keeping of such tools and implements, and it shall be unlawful and a breach of his bond to loan or hire out, or to suffer any one to use the same, unless under his contract as supervisor. The supervisor shall give orders for the cost of said tools, and so forth, for necessary repairs, on same, for sustenance for work-stock hired, and for wages of hired hands and overseers, which shall be approved and paid as other road expenditures. He shall keep duplicate orders, and report to the court at its September term each year an itemized account of all moneys expended by him for the foregoing purposes.

Sec. 4318A. Fiscal court may purchase tools—duty of overseers respecting—penalties. That the fiscal courts in each county in this Commonwealth, wherein the dirt and gravel roads are worked by hands allotted to same, shall have the right to purchase, out of the road and bridge funds of their respective counties, and furnish to each overseer of roads, such tools as the court may think right and proper to be used in keeping said roads in repair. Each overseer shall be required to give his receipt for all tools furnished him under the provisions of this act, and it shall be his duty to take proper care of all tools thus furnished him, and when not in use keep them properly housed, and at the expiration of his appointment turn them over to his successor and take his receipt therefor, which receipt shall be filed with the clerk of the county court. Overseers or surveyors, who are furnished tools under the provision of this act shall

not allow them to be used for any purpose, except to be used on the public roads of the county. Any overseer, or surveyor, violating any of the provisions of this act shall be deemed guilty of a misdemeanor and upon conviction fined not less than two nor more than ten dollars, which may be recovered upon warrant in the justice's court of the district, or county court of the county wherein said violator lives. All such fines, when collected, shall be used for road purposes, and upon failure to pay a *capias pro fine* may issue. (This section is an act of March 24, 1902.)

Sec. 4319. Fines to inure to benefit of roads. All fines assessed under this act shall be collected as other fines, and shall, less county attorney's commissions, inure to the benefit of the road fund of the county, and shall be paid out by the collecting officer, as the road fund is paid; and the tax collector shall report amounts of fines, and from whom collected, to the levy court annually

Sec. 4320. Bridges—commissioner to superintend. The fiscal court may apoint a special commissioner to let out and superintend the construction or repairing of any birdge or bridges, and fix his compensation therefor: Provided, however, That the supervisor shall not be liable for any defects or failure in regard to such bridge; but the special commissioner shall be liable therefor, and the court shall require him to give bond, with surety.

Sec. 4321. Delinquent taxpayers to work out taxes—penalty for failure. That all delinquent and capitation taxpayers of the county between the ages of eighteen and fifty years shall be required to work out their said taxes at such times and on such roads as the supervisor may prescribe within reasonable distance of their respective places of residence, for which each delinquent shall have credit at the rate of one dollar for each full day's work performed by him. The supervisor shall notify such delinquents, as road hands are now required by general law to be notified; and for failing or refusing to comply with the order of the supervisor, when so notified, such delinquents are made liable to all the pains and penalties now imposed by general law on persons who fail or refuse to work on roads. The supervisor is authorized and empowered to collect taxes due from such delinquents, if they desire to pay the same instead of working on the roads; and he shall be liable on his bond for the money so collected, and the same may be recovered from him on motion, on ten days' notice in the quarterly court. The taxes so collected shall, by the supervisor, be reported to the county court, and paid over to the tax-collector, and held and applied by him as part of the road fund.

Sec. 4322. Prisoners to be worked. All male persons confined in the county jails or workhouses, under judgment of a court directing that they may be worked at hard labor, shall be available to the supervisor or overseer, for the purpose of working them on the public highway. In counties having workhouses, the prisoners may be obtained by the supervisor or

overseer from the board of commissioners and the superintendent of the work-house, upon such terms as may be agreed upon between them. In counties having no workhouses, the prisoners may be obtained upon application to the judge of the county court who shall give an order for such of said prisoners in jail as may be deemed proper. The jailer having such prisoners in custody shall deliver them to the supervisor or overseer on the presentation of the order of said judge. The supervisor or overseer shall be responsible for their safe-keeping, and may, if necessary, attach a ball and chain to any of said prisoners, and the prisoners so employed shall be, while in the hands of the supervisor or overseer, governed, controlled and cared for by them as provided in the law governing superintendents of workhouses, and the prisoner shall receive credits for work as provided by law: Provided, All such work shall be done on such public highways and streets as have not been let out to a contractor at a stipulated price, unless the contractor consents thereto.

Sec. 4323. Supervisor—removal of. The fiscal court, at any regular or called term, a majority of the justices in commission concurring, may, on motion of the county attorney, remove the supervisor from office for neglect of duty, malfeasance or misfeasance. But he shall be first notified in writing of time and grounds of said motion for ten days.

Sec. 4324. Taxpayer may work out his tax. If the fiscal court shall so decide, any taxpayer who may so desire shall have the privilege of working on the public roads in his county sufficiently long to pay his road and bridge tax, but shall work for the same compensation per day and the same number of hours per day, and under the same regulations that other hands employed to work on the roads do, and the supervisor shall give such person who desires to pay his road-tax in work a receipt, specifying the number of days he may so work; and if the work done shall equal his tax at the specified price agreed on, then such receipt shall be evidence of the payment of his road and bridge-tax in full, but if he only works out a part of said tax, the receipt shall only evidence such part payment thereof.

Sec. 4325. Persons damaging road by unusual use, to repair—penalty. Any corporation, company or individual, who may, by unusual use of a road, materially damage the same, shall repair all damages caused by the use of such road or roads. The supervisor or overseer of roads shall at any time when necessary, notify said corporations, companies or individuals of their duty as provided in this section; and should the said parties so notified fail, in a reasonable length of time, to be filed in the notice, to make such repairs, such parties shall be deemed guilty of obstructing the public roads, and shall be subject to a fine of not exceeding one hundred dollars, to be applied to road purposes.

Sec. 4325A. Passenger and freight vehicles may be licensed. That in all counties having free turnpikes the fiscal court of such counties may place license on livery vehicles or any other vehicles that carry passengers or freight for pay. (This section is an act of March 19, 1902.)

Sec. 4326. Sign boards at cross-roads. Every road supervisor or overseer shall, when directed by the county court, keep an index erected at the forks or crossings of all public roads in his district, upon which shall be inscribed in plain letters the name of, and distance to, the most noted place or places to which each road leads, the cost of which shall be paid as other road expenses.

Sec. 4327. Ferry-owner to keep road near ferry in repair—penalty. The owner or occupant of a ferry shall keep the roads leading to and from the same between high and low-water mark in good repair. But if high water ever extends farther than to the top of the first principal bank of the river, then the owner or occupier of the ferry shall only keep the roads leading from the same in repair to the top of such bank. The owner or occupier of a ferry shall, for neglecting his duty under this section, be fined not less than ten dollars and not more than fifteen dollars.

Sec. 4328. Bridge—provision for erecting. When a bridge or causeway shall be necessary on a road, and the expense of erecting or repairing the same is too great to be paid out of the road and bridge fund for that year, the fiscal court of the county may have the same erected or repaired, and levy the cost thereof on the county, and the causeway may be made of broken stone, gravel or other hard and durable material, or of wood.

Sec. 4329. Bridge between adjoining counties—commissioners. When the fiscal court of any county shall deem it advisable to erect a bridge or causeway over any place between that and an adjoining county, the court shall appoint a commissioner and notify the fiscal court of the adjoining county thereof, and request the latter to appoint a like commissioner, and it shall be the duty of the court so requested to appoint such commissioner. The persons so appointed shall meet at the place proposed for erecting the bridge or causeway and agree on a plan for the same, and contract for the erection thereof, and each of said fiscal courts shall levy the cost of such work on its county in proportion to the number of tithables in each county.

Sec. 4330. Bridge between adjoining counties—proceedings when one county refuses to act. When the fiscal court of one county shall think it expedient to build a bridge or a causeway, and shall appoint a commissioner on its part, as provided in the preceding section and the court of the adjoining county shall refuse to appoint a commissioner, or when the county court of one county shall deem it necessary to open a road to the county line for the convenience of traveling to some public place in another, and the county court of such other county shall refuse to continue the road through such county, the circuit court of the county so refusing may issue a writ of mandamus to the fiscal court requiring it to show cause why an order shall not be entered directing the appointment of the commissioner and the erection of such bridge or causeway, or the opening of the road. When the mandamus is returned the circuit court shall hear and consider such evidence touching the matter as either party may adduce, and shall either dismiss the proceeding or award a peremptory mandamus, as may seem proper.

Sec. 4331. Road crossing dam or race—duty of owner—penalty. When a public road crosses a dam, race or pierhead the owner or occupier thereof shall constantly keep the same in repair, at least twelve feet wide at the top, through the whole length thereof, and keep a bridge across the race or pier-head of like width, with strong rails on each side of the pier-head flood-gates or any wash-out through or around the dam under the penalty of one dollar and fifty cents for every twenty-four hours he shall fail to comply with the requirements of this section; but when a mill dam or pier-head shall be carried away by flood, or otherwise be destroyed without fault of the owner or occupier he shall not be liable to such penalty until one month after the dam and pier-head shall have been washed out.

Sec. 4332. County officers not to be interested in contracts concerning roads—penalty. It shall be unlawful for the county judge, any justice of the peace, sheriff or tax collector, county attorney or supervisor or assistant supervisor, or any overseer, to become directly or indirectly interested in any contract for working roads or building or repairing bridges; and it shall be unlawful for either of said officers or employees to buy or become interested in any road or bridge order or certificate, or any claim growing out of such work. Either of said officers or employees who shall violate this section shall be guilty of a misdemeanor, and, upon indictment by a grand jury, and conviction thereof before any court of competent jurisdiction, shall be fined for each offense not less than fifty nor more than three hundred dollars. This section shall be given in charge to the grand jury by the judge of the circuit court.

Sec. 4333. County attorney—duty of. It shall be the duty of the county attorney to prosecute all warrants under this act when notified by the court trying the same, and for all cases so prosecuted he shall receive for compensation a commission of twenty-five per centum of the fines imposed in cases wherein he shall prosecute; and on his failure to attend or prosecute, the court trying the warrant may appoint some other practicing attorney to prosecute, who shall be entitled to said commission for his services.

Sec. 4334. Reports by supervisor to fiscal court. It shall be the duty of the supervisors, when called on by the fiscal court, to furnish to said court any such information in writing as may be required, with regard to the roads and bridges and the work done thereon.

Sec. 4335. Penalty for injuring or obstructing—duty of officer. Any person who shall wilfully obstruct, injure or destroy any of said public roads or bridges, any index or finger board, or any culvert or ditch on said roads, or shall wilfully injure any of the tools or implements, or who shall, without right, take possession of or use or appropriate the same, shall be fined for each offense not less than five nor more than fifty dollars, to be recovered in like manner as fines against contractors, and shall also be liable in a civil action for double damages to the county having jurisdiction of the amount claimed. It shall be the duty of the supervisor or overseer

and his assistants, and of all constables, town marshals and sheriffs, to report promptly to the county judge or some justice of the peace all violations of this act.

Sec. 4436. Trial by jury—appeal. In all prosecutions under this act, the parties shall be entitled to trial by jury. In all cases, when the party is fined more than fifty dollars, an appeal shall lie to the circuit court. Either Commonwealth or defendant may prosecute the appeal; the appeal to be taken as now provided by law.

Sec. 4437. Jurisdiction where road runs into another county. Whenever the route of a proposed new road commences in one county, and, running partly through another, finally terminates in that in which it commenced, then, and in all such cases, the county court of that county in which said road begins and terminates shall have the right to appoint commissioners to view the entire route in both counties, and shall have jurisdiction to open and establish the same, as now provided by law in cases where the road is wholly within the limits of one county.

Sec. 4438. Tax collector—payment of road funds by. That the tax collector of each county shall pay out the road and bridge funds in discharge of the liabilities of the county for work on roads and bridges (including pay of contractors, hire of hands, and teams, cost of implements and material, and provender for teams, pay of overseers, and all necessary expenses in and about keeping the roads in good order, and building and repairing bridges, etc.), but in no case shall he pay out any of said money except upon the order of the supervisor (specifying what for), with the indorsement thereon of the county judge of his approval, or when no supervisor, upon order of the overseer or commissioner having charge so indorsed. The collector shall have blank forms of such orders printed in duplicate and numbered, and he shall retain a duplicate of each order given by him, and the number thereof, which he shall exhibit and return to the levy court when required by order of said court.

Sec. 4439. Hills—supervisor may have cut down by contract. The supervisor, upon the order of the county judge, entered on the order-book of his court, shall let out, by written contract, to the lowest and best bidder, the grading or cutting down of any hill or hills upon the public roads, specifying in the contract the amount and character of such work, how to be done and when completed, and setting forth the amount to be paid therefor, either in gross or by the yard, and requiring of the contractor bond, with approved surety, for the performance of the contract, such bond to be returned to the county court clerk, and by him kept as other road contractor's bonds; and said bond may be enforced and proceeded upon as other road bonds. The supervisor shall receive such work, if done as required, and certify the fact, and give an order for the money, which order is to be indorsed "approved" by the judge, and paid by the tax collector out of the road or other funds for the purpose. If ordered as aforesaid by the judge, the supervisor may hire hands or work convicts or delinquent tax-

payers in grading hills; and the pay of hired hands shall be upon order as aforesaid. If there be no supervisor, the fiscal court may order such work done in the manner provided in this section by the county judge or a commissioner appointed by it.

Sec. 4340. Shade trees—planting of—penalty for injuring. The fiscal court of each county may, by an order duly entered of record, provide for procuring, planting, protecting and caring for shade trees on any of the public roads in each county and may pay for the same out of any unexpended moneys belonging to the road or bridge fund of the county, or may agree with taxpayers to do such work at a stipulated price, and allow such person credit on their road and bridge taxes. It shall be the duty of the supervisor, his assistants and overseers, respectively, to look after such shade trees, and to report to the county court judge all injuries to or destruction of the same, or of any box or other protection placed around or near the said trees, or of any violation of the regulations made by the court for the preservation of the same. And any person who shall intentionally or carelessly destroy or injure any of such trees, or the boxes or other protection to the same, shall, for each offense, be fined not less than two dollars and fifty cents nor more than twenty dollars, to be recovered on warrant issued by, and returnable before, and to be tried by, the judge of the quarterly court.

Sec. 4341. Wells and cisterns—fiscal court may establish. The fiscal court of each county is authorized and empowered to have wells or cisterns made at such points on the public roads in said county as it may deem necessary for furnishing water to work-beasts employed in hauling or in travel over said roads, and other stock traveling on roads; and to have suitable pumps, buckets, pipes and troughs provided at such wells or cisterns for furnishing water to such beasts, and may provide means to utilize the water from any spring, pond or running stream for such purpose: Provided, however, The rights of the owners of such springs, ponds or running streams be protected, and compensation, if required by the owner, be made as now provided by law in regard to condemning private property for public use. The county court shall have such watering places kept in good repair.

Sec. 4342. Penalty for injuring well or appliances. Any person injuring any such well, cistern, pump, trough, pipe, bucket or other means of watering stock, as provided for in the preceding section, shall be fined for each offense not less than five nor more than fifty dollars to be recovered by warrant before the quarterly court, and the offender may be imprisoned and required to labor on the streets or roads, unless the fine be replevied or paid.

Sec. 4343. Shade trees and watering places. It shall be the duty of the supervisor, his assistants and the overseers of roads, to report all offenses against the preceding provisions for shade trees and watering places.

Sec. 4344. Assistant supervisor—appointment and compensation. The supervisor may be authorized by order of the fiscal court, at any of its regular terms, to appoint assistant supervisors to aid him in the discharge of his duties, and especially in supervising grading of hills and the working of roads by hired hands, convicts and delinquent taxpayers. The court shall, by order, fix the amount of compensation per day or by the month of such assistants; and the supervisor shall make a report to the levy court at its October term each year of the number of assistants employed by him, and the length of time each has worked, and shall give orders for their pay, to be approved and paid as other road orders.

Sec. 4345. Power of county judge to repair bridge. In cases of emergency the county judge may have any bridge (kept by the county) repaired or a new one built; but he shall make no contract for such work or for any work on any bridge exceeding five hundred dollars, without first calling together the fiscal court and laying the matter before them; and it shall be their duty, in such cases, to make immediate provision for the emergency.

Sec. 4346. Supervisor and assistants—fiscal court to pay. The fiscal court shall fix and appropriate money to pay a reasonable compensation to the road supervisor annually, and to any assistant supervisor or special commissioner or other person appointed, or authorized to be appointed, by it for the service rendered by such person.

Sec. 4347. County attorney—duty of. It shall be the duty of the county attorney to make diligent inquiry as to any violation of this law, and cause such proceedings to be instituted as are provided herein when such violation is ascertained. It shall be his duty to attend in person and prosecute all offenders under this law.

ARTICLE II.

(Act of June 23, 1893.)

PASSWAYS.

Sec. 4348. Places to which may be opened—appointment of commissioners—report. Whenever it shall appear to a county court that it is necessary for a citizen to have a private passway over the land of one or more persons in the county to enable him to attend courts, elections, a meeting-house, a mill, a warehouse (a regular steamboat landing), ferry or railroad depot, most convenient to his residence, the court shall appoint commissioners as in case of a road, who, being first sworn to discharge their duties faithfully and impartially, shall go upon the lands of the person through which the passway is proposed, whether arable or not, and shall report, in writing, to the court whether or not a private passway is necessary to the applicant for the purposes aforesaid; and if favor-

300 *Seventeenth Biennial Report Bureau of Agriculture.*

able to the passway, they shall, in their report, designate the exact route for the same by metes and bounds, course and distance, and the width thereof, which, in no case shall exceed twenty feet, and they shall determine and assess what will be a just compensation to each owner and tenant, if any, for the land proposed to be taken for a passway, in the same manner as upon an application to open and establish a new road. (Section as amended by act of February 24, 1894. Appointment of commissioners, sec. 4291.)

Sec. 4349. Notice of application to owner. The applicant for commissioners shall give the person through whose land the passway is proposed ten days' previous notice of the intended application.

Sec. 4350. Report of commissioners—copy to be given owner. The commissioners shall make out a report of their proceedings, and sign the same, and, at least ten days before the court is required to act, deliver a copy thereof to the proprietor, and tenants, if any, of the lands over which the proposed passway is to run.

Sec. 4351. Trial of Application. When the report of the commission is returned to the court, it shall proceed to establish the passway, or refuse the same as in the case of a road.

Sec. 4352. Damages paid by applicant before road opened. No passway shall be established without the consent of the owners, until compensation and damages to the owner and tenants, if any, of the land shall be assessed, as in case of a public road, which compensation and damages, and the cost of the whole proceeding, shall be paid by the applicant before the passway shall be established. (Assessment of damages, secs. 4292, 4296. See, further, costs, sec. 895.)

Sec. 4353. Gates to be erected and maintained by applicant. Any gates that shall become necessary by the establishment of a passway shall be erected and kept up at the expense of the applicant for the passway.

Sec. 4354. Obstructing passway—penalty. Any person who shall put any obstructions in a passway, or shall prop open, pull down, injure, or leave open a gate erected across the same, shall be liable to a fine of ten dollar, recoverable by warrant in the name of the Commonwealth, the fine to be laid out in repairing the passway or gate.

Sec. 4355. Change of passway—how effected. When the proprietor of lands over which a passway may be established shall wish to change the same, he shall give the applicant for the passway ten day' previous notice, and may, thereupon, apply to the county court, and the court shall appoint commissioners to view the proposed change, who shall be sworn as on original applications, and shall go on the grounds and report the conveniences and inconveniences of making the change. Upon the return the court shall as may seem proper, make the proposed change or not. But before such change shall take effect the proprietor shall open the new route, and remove

and put up the gates across the same, at his own expense, and pay the other costs of procedure.

Sec. 4356. **Discontinuance of—places not to be opened—appeal.** Passways may be discontinued by court in the same manner as roads. The law regulating appeals in road cases shall apply to and govern proceedings concerning passways. No passway shall be established through any town lot, burying ground, building or yard (or grounds of any charitable institution of this Commonwealth), without the consent of the owner. (Appeals in road cases, see sec. 4303.)

CANADA THISTLES.

Section 200. Duty of owner to cut and prevent thistles from going to seed—penalty.

It shall be the duty of every person or persons, and of every corporation holding lands in this Commonwealth, either by lease or otherwise, on which any Canada thistles, or weed commonly known as Canada thistle, may be growing, to cut same, so as to prevent such weeds or thistles from going to seed and the seed of the same from ripening, any person or persons, or corporation, as aforesaid, who shall knowingly neglect or refuse to comply with the provisions of this act, shall forfeit and pay a fine of five dollars, recoverable before any justice of the peace, or by indictment in the circuit courts of the State.

Section 201. Right of aggrieved person to enter and cut thistles—If any person or persons, or corporations, so holding land as aforesaid on which Canada thistles or the weeds commonly known as such, shall be growing and likely to ripen seed thereon, shall knowingly neglect or refuse to cut and destroy the same so as to prevent the seed thereof from ripening, it shall and may be lawful for any person or persons, who may consider themselves aggrieved or about to be injured by such neglect or refusal, to give five days' notice in writing to such person or persons, or corporation, to cut and destroy such weeds or thistles, and on their neglect or refusal to cut and destroy the same at the end of five days, it shall and may be lawful for any person or persons so aggrieved, or believing themselves about to be injured thereby, to enter upon or hire other persons to enter upon such lands or premises, and cut down and destroy such Canada thistles. And the person or persons so employed shall be entitled to recover from such person or persons, or corporation, owning or holding such lands, compensation at the rate of one dollar per day, to be recovered as debt of like amount in any court of this Commonwealth of competent jurisdiction.

Millers in Kentucky may take for toll one-eighth of all grain ground on or exchanged on a water mill, and one-seventh part ground on, or ex-

changed in a steam mill. The grain shall be "struck" in sealed measure; millers shall grind grain in the order brought to their mills.

The act regulating sales of tobacco in this State, approved April, 1892, was repealed March 29 1902.

KENTUCKY GAME LAW.

CHAPTER 38.

An act to amend and re-enact an act, entitled "An act to protect game and small birds."

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

That an act, entitled "An act to protect game and small birds," which became a law February 27, 1894, being chapter 28, session acts 1894, and being chapter 57 Kentucky Statutes, be amended by adding at the end of section 16 of said act, the following:

Section 17. No person shall kill or pursue with such intent, or have in his possession when so killed any rabbit or squirrel between the 15th day of September and the 15th day of November in each year. Provided, any one may catch rabbits with dogs or in snares.

Approved March 18, 1904.

CHAPTER 68.

An act creating the offices of fish and game wardens and defining the powers and duties and fixing the compensation of such officers, and for the further protection and preservation of fish, game and birds in the State of Kentucky.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. The offices of fish and game wardens are hereby created.

Section 2. The county judge of each county shall appoint one or more fish and game wardens for each county in the State, who shall hold office and be subject to removal therefrom at the pleasure of the county judge. Each game warden, before entering upon the duty of his office shall execute his bond to the Commonwealth, with good surety, to be approved by the county judge.

Section 3. It shall be the duty of fish and game wardens to enforce within this State all laws relating to the protection, preservation and propagation of fish, birds and game. Each fish and game warden shall have full power to execute and serve all warrants and process of law issued for, in connection with or growing out of, the enforcement of any law relating to the protection, preservation or propagation of fish, birds and

game in the same manner and to a like extent that any sheriff or constable may serve and execute such process, and shall be entitled to the same fees for said services as are now allowed by law to sheriffs for similar services in criminal cases. They may arrest on sight and without warrant any person detected by them in the act of violating such law; they shall have the same right as sheriffs to require aid in executing any process or in arresting without process any person found by them in the act of violating any of the said laws; and they shall have authority to seize without process; any birds, fish or game then found in the possession of any such person, together with guns, nets, seines, traps or other devices with which the game was taken or killed, and destroy or confiscate such guns, nets, seines, traps or other devices, and forthwith convey such offender before a court or magistrate, having jurisdiction of the offense, and such court or magistrate shall, upon the filing by the warden of a proper complaint, proceed speedily to try and determine the truth of the charge.

Section 4. After payment of the percentage of fines allowed by law to the other public officers, the remainder shall go to the fish and game warden instituting the prosecution, and upon filing a verified claim with the Auditor, he shall draw his warrant upon the Treasurer in favor of such fish and game warden.

Approved March 21, 1904.

CHAPTER 107.

An act prohibiting the sale or transportation of wild turkeys, pheasants, grouse, partridge and quail, within the State of Kentucky.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. That it shall be unlawful in the State of Kentucky, at any time, to buy, sell, expose for sale, offer for sale, or have in possession for the purpose of bartering or selling any wild turkeys, pheasants, grouse, partridge or quail, which have been killed within the State.

Section 2. That it shall be unlawful for any person, corporation or common carrier to receive for transportation, or to transport, or cause to be transported, or to have in possession with the intent to transport, or to secure the transportation of, within or without this State, any of the birds or fowls mentioned in section one of this act, which have been killed in this State

Provided, however, That it shall not be unlawful for such person, corporation or common carrier to transport a hunter with his game lawfully killed by him within this State.

Section 3. Each bird or fowl so bought, sold, offered for sale, had in possession for sale or transportation, received for transportation, or transported, contrary to the provisions of this act, shall constitute a separate offense.

Section 4. Whoever violates any provision of this act shall be fined

not less than ten dollars, not more than twenty-five dollars for the first offense, and not less than twenty-five dollars nor more than fifty dollars for any subsequent offense.

Approved March 24, 1904.

PROVISIONS IN KENTUCKY'S GAME LAW.

Black, gray and fox squirrels can be killed from June 15 to September 15, and from November 15 to February 1.

Rabbits may be killed from November 15 to September 15.

Wild goose, wood duck, teal, and other wild birds may be killed from August 15 to April 1.

Wild turkey from September 1 to February 1.

Woodcock from June 20 to February 1.

Squirrel, partridge and pheasant from November 15 to January 1.

Dove from August 1 to February 1.

For thrush, meadow lark, finch, martin, swallow, wood-pecker, flicker, oriole, red-bird, tanager, cat-bird or other song or insectivorous bird, the season is always closed except birds that are destructive to fruit or grain crops may be killed.

HUNTERS MUST TAKE OUT LICENSE.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. It shall be unlawful for any person who is a non-resident of the State of Kentucky to hunt anywhere within the State of Kentucky any of the wild animals, fowls or birds that are protected during any part of the year without procuring a license to do so, and then only during the respective periods of the year when it shall be lawful to do so.

PROTECTION OF BIRDS, NESTS AND EGGS.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. That no person shall within the State of Kentucky kill, catch or have in his or her possession, living or dead, any wild bird other than a game bird, or purchase, offer or expose for sale, transport or ship within or without the State, any such wild bird after it has been killed or caught except as permitted by this act. No part of the plumage, skin or body of any bird protected by this section shall be sold or had in possession for sale. For the purposes of this act, the following only shall be considered game birds: The antidae, commonly known as swans, geese, brant, and river and sea ducks; the Rallidae, commonly known as rails, coots mud-

hens and gallinules; the Limicolae, commonly known as shore birds, plovers, surf birds, snipe, woodcock, sandpipers, tattlers and curlews; the Gallinae, commonly known as wild turkeys, grouse, prairie chickens, pheasants, partridges and quails; and the species of Columbidae, commonly known as mourning doves.

Section 2. No person shall, within the State of Kentucky, take or needlessly destroy the nest or eggs of any wild bird other than a game bird, or have such nest or eggs in his or her possession, except as permitted by this act.

Section 3. Any person violating any of the provisions of this act shall be guilty of a misdemeanor and shall be fined five dollars for each bird living or dead, or part of bird, or nest or set of eggs or part thereof possessed in violation of this act; or shall be imprisoned not less than five nor more than thirty days for each offense; or shall be subject to both fine and imprisoned at the discretion of the court.

Section 4. Section one, two and three of this act shall not apply to any person holding a certificate giving a right to take birds, their nests or eggs for scientific purposes, as provided for in section five of this act.

Section 5. Certificates may be granted by _____ or by any incorporated society of natural history in the State, through such persons or officers as said society may designate, to any properly accredited person of the age of fifteen years or upward; permitting the holder thereof to collect birds, their nests or eggs, for strictly scientific purposes only. In order to obtain such certificate the applicant for the same must present to the person or persons having the power to grant said certificate written testimonials from two well-known scientific men, certifying to the good character and fitness of said applicant to be intrusted with such privilege; must pay to said persons or officers one dollar to defray the necessary expenses attending the granting of such certificates, and must file with said persons or officers a properly executed bond, in the sum of two hundred dollars, signed by two responsible citizens of the State as sureties. On proof that the holder of such certificates has killed any bird, or taken the nest or eggs of any bird, for other than scientific purposes, this bond shall be forfeited to the State, and the certificate become void, and the said holder shall be further subject for each offense to the penalties provided therefor in section three of this act.

Section 6. The certificate authorized by this act shall be in force only during the calendar year in which issued, and shall not be transferable.

Section 7. English or European house sparrow, great horned owl, sharp-shinned hawk, Cooper's hawk, crow and crow blackbird are not included among the birds protected by this act.

Section 8. Nothing in this act shall prevent any citizen of the State of Kentucky from destroying birds found injuring fruit or crops on his premises; provided, that such birds when killed shall not be sold or shipped out of the State.

Section 9. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

CHILD LABOR LAW.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. That it shall be unlawful for a proprietor, foreman, owner or other person to employ any child less than fourteen years of age in any workshop, factory or mine, in this State; that unless said proprietor, foreman or owner shall know the age of the child, it shall be his or their duty to require the parent or guardian to furnish a sworn statement of its age, and any swearing falsely to such by the parent or guardian shall be perjury and punishable as such.

Provided that if the parent or guardian and the county judge of any county may consent in writing for such employment, then in that event such employment may be made, subject to the approval of the county attorney of said county, in the event of any complaint, and if he thinks after investigation of such complaint, that it is against the best interests or moral welfare of such infant child, he may so notify said employer and then this act applies as if no consent was given.

Section 2. That any proprietor, foreman or owner employing a child less than fourteen years of age, in conflict with the provisions of this act, except where such proprietor, foreman or owner has been furnished with a sworn statement of guardian or parent that the child is more than fourteen years of age, shall be guilty of a misdemeanor, and upon conviction, shall be fined not less than twenty-five dollars, and not more than two hundred and fifty dollars.

Section 3. That the grand jury shall have inquisitorial powers to investigate violations of this act, and that judges of the circuit court of the State shall especially charge the grand jury at the beginning of each term of the court to investigate violations of this act.

Section 4. That this act shall take effect ninety days after the adjournment of this General Assembly.

PROTECTION OF ORCHARDS, GAME PRESERVES, &c.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. That it shall be unlawful for any person without the consent of the owner thereof to enter any orchard, game preserve, ginseng garden, or farm or other premises when same is enclosed by a wire, board, plank, picket, stone, stone cleft, or other fence, not less than seven feet in height, after the owner thereof has conspicuously displayed on said premises on board, not less than twelve by twenty-four inches in size, the word "posted," and it shall be unlawful for any person to cut, tear down, burn or otherwise injure any such fence enclosing such orchard, game preserve, ginseng garden or farm or other premises; and any one found guilty of

violating the provisions of this act shall be deemed guilty of a felony and on conviction shall be confined in the State penitentiary not less than one nor more than three years.

PUBLIC LEVEES.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

Section 1. That the county judge of any county shall have power at any regular session of the county court, where same shall be conducive to the public health, convenience, or welfare, or when same will be of public benefit or utility, to establish, and aid in construction, as herein provided, of any levee, along any river or water course, within said county.

Section 2. Before the county judge can establish any levee, there shall be filed with the county clerk of such county a petition signed by at least five land owners of said county, setting forth the necessity therefor, with a general description of the proposed starting point, route and terminus, the names of the owners and the tenants of lands, if known, and if not known it shall be so stated, over which the proposed levee is to pass, and shall give bond with good and sufficient sureties, payable to the State, to be approved by the clerk, conditioned to pay all expense of establishing said levee and the damages accruing to the owners and tenants of lands over which same passes. As soon as said petition is filed and said bond executed, said judge shall, if in regular session, or at his next regular session, appoint three impartial housekeepers of the county as commissioners to assess damages, the owner or owners, or tenants, if any, may be entitled to receive, who shall be sworn to faithfully and impartially discharge their duties under the law; and who shall proceed at the time to be set in the order, with a surveyor, who shall be a civil engineer, and view out and make an accurate survey of the line of said proposed levee from its starting point to its terminus, marking and platting the route of same by courses and distances and ascertain the amount of land required for the purpose of erecting said levee, at the various points along its line, not exceeding, however, four hundred feet in width at any point; the name and residence of the owners and tenants of same, whether same are infants, of unsound mind, or married women; assess what will be a just compensation to each owner and tenant, if any for the land required and sought to be appropriated for the establishment of said levee, the damages, if any, to the residue of the tracts beyond the consequential benefits which will be derived from such residue from the levee. If a person has only an estate for life or years in such land and remainder in fee belongs to another, the commissioners shall apportion the damage between them. All of which said commissioners shall report in writing signed by them to the court, together with a map or diagram of the proposed route of levee, and report also whether or not the proposed levee will be conducive to the public

health, convenience or welfare, or whether the same will be of public benefit or utility, and in case the commissioners find the proposed levee not of public benefit or utility as above stated, they shall so report and in which case their report need only state that they find the proposed levee not of public benefit or utility in any way.

Section 3. Upon the report of the commissioners on an application to establish a levee, if favorable to same, the court shall issue process against all the owners and tenants of land over which said report shows the proposed levee to pass, who have not filed in said court relinquishment of the right of way for the same over their lands, to show cause why the said report should not be confirmed, and shall make such orders as to non-residents and persons under disability, as required by the Civil Code of Practice in actions against them in circuit court.

Section 4. At the first regular term of the county court after the owners and tenants shall have been summoned the length of time prescribed by the Civil Code of Practice before an answer is required, no exceptions being filed to said report by any party, it shall be the duty of the court, from the report and other evidence, if any, to determine whether the levee shall be established as recommended by the commissioners.

Section 5. When exceptions shall be filed by either party, the court shall, unless the parties agree that the court may try such issues, forthwith cause a jury to be impaneled to try the issues of the fact made by the exceptions, and each juror shall be allowed one dollar per day for his services, to be taxed as costs. In assessing the compensation and damages, the jury shall be governed by the rule prescribed in section two of this act. If sufficient cause be not shown for setting aside the verdict, the court shall, upon the report, verdict and other evidence, if any, determine whether the levee shall be established as recommended in said report.

Section 6. If the court decide that the said proposed levee be established, he shall cause an order to be entered upon the records of said court, and a copy of the same to be issued and directed to the applicants and petitioners, upon conditions they pay the cost of procedure and all sums required to be paid to the owners and tenants of lands taken, said levee to be established by them as reported.

Section 7. The party aggrieved may within thirty days by executing bond as required in other cases, prosecute an appeal to the circuit court of the county, from the decision of the county court, ordering a levee established, or refusing such order, and the appeal shall be tried *de novo*, and from the decision of the circuit court either party may prosecute an appeal to the Court of Appeals, and the latter court shall have jurisdiction only of matters of law arising on the record of such cases.

Section 8. The county judge shall, when he establishes a levee, appoint five resident land-owners of the vicinity of said levee to be known and designated as the levee commissioners of said county, whose duty it shall be to superintend the construction, care and protection of said levee when built, who shall serve as said levee commissioners for the term of four

years or until their successors are appointed. And the county judge shall every four years thereafter appoint levee commissioners for said county for like qualification, and fill any vacancies in said levee board occasioned by death, removal or other cause.

Section 9. Said levee commissioners shall superintend and see that all levees are properly constructed and cared for, that convenient crossings of said levees are made at the intersection of all public roads for the traveling public and at such private crossings as said commissioners may from time to time establish. That at any time said commissioners may deem said levees in peril or danger of being damaged or destroyed after being built, by reason of wind or high water, they shall, after giving six hours notice to all male persons between the ages of eighteen and fifty years, residing within the territory protected by said levee, require them to assemble at a point to be designated by said commissioners and aid and labor in the repairs and protecting of said levees, for which services they shall be paid by the commissioners at the rate of one dollar per day. And any person able to work on said levee under the provisions of this section, who shall fail to do so after being so notified shall be fined for each day he shall so fail the sum of five dollars, to be recovered by warrant issued and tried by any justice of the peace for said county.

Section 10. It shall be unlawful for any person to ride a horse or drive any vehicle along or across any public levee except at the crossings of public roads or such private crossings as the levee commissioners may have established, and any one so offending shall be found guilty of a trespass and for each offense fined not less than ten nor more than fifty dollars.

Section 11. Any one who shall willfully and feloniously cut, damage destroy or attempt to cut, damage or destroy any public levee shall be deemed guilty of a felony, and for each offense confined in the State penitentiary for not less than one nor more than five years.

Section 12. Whereas, The Federal Congress has made appropriation for and caused the survey of levees for the benefit of the public to be made in this State, and bills are now pending to aid in the erection of same; and large sums have been raised by private subscription to build said levees; and whereas, under the present laws of the State, the land required for the location of said levees can not in many instances be obtained, and it being for the benefit and utility of the public at large, an emergency is declared to exist, therefore this act shall take effect and be in force from and after its passage.

VEHICLE LICENSE.

That in all counties having free turnpikes the fiscal court of such counties may place license on livery vehicles or any other vehicles that carry passengers or freight for pay.

FAST RIDING OR DRIVING.

If any person shall be engaged, directly or indirectly, in running a horse, by way of practicing him, or in running a horse race, on a public highway or on the street of any town or city, or shall ride or drive any horse in a gallop or run on or through the street of any city or town, he shall be fined not less than five nor more than twenty-five dollars for each offense.

Chapter 99. An act to amend and re-enact, entitled "An act to provide for the improvement and development of the live stock, agricultural and kindred interests by the establishment and maintenance of a State Fair, being chapter one thousand one hundred and ninety-three b of the Kentucky Statutes approved March twenty-ninth, one thousand nine hundred and two.

Be it enacted by the General Assembly of the Commonwealth of Kentucky.

Section 1. That an act, entitled "An act to provide for the improvement and development of the live stock, agricultural and kindred interests by the establishment and maintenance of a State Fair," approved March twenty-ninth, one thousand nine hundred and two, known as chapter one hundred and nineteen b, Kentucky Statutes, be amended and re-enacted so as to read as follows:

"Section 1. That an annual State Fair for the exhibition of agricultural, mechanical, horticultural, dairy, forestry, poultry, live stock, mineral and all other industrial interests of the State be, and the same is hereby, created, to be known as the Kentucky State Fair.

"Section 2. The management and control of this State Fair shall be in the hands of the State Board of Agriculture, Forestry and Immigration, and said board shall determine the time for holding said fair each year

"Until said fair shall be permanently located, said board shall determine the place of holding said fair each year: Provided, That the city or county where said fair is proposed to be held for any year, or the citizens thereof, shall furnish and provide to the said board not later than the fifteenth day of June, one thousand nine hundred and six, and thereafter, not later than the fifteenth day of May in each year, a bond or other good and sufficient security in the sum of ten thousand dollars to indemnify and guarantee said board against any loss which may be sustained by it in holding the fair for that year. Should the income for holding the fair for that year be insufficient to pay the expenses thereof for that year, then the said bond or other security, and the guarantors therein, shall be liable for, and subject to, the payment of the deficiency, not exceeding the amount of such bond or security: Provided, further, If, in any year in which the fair is held, at any place, the said board shall have funds on hand as the profits of previous fairs held at said place, the same shall be applied to the payment of any loss sustained before the guarantors in the bond or other security above mentioned shall be liable for any sum.

But the profits of any fair held at one place shall not be used to pay losses sustained in holding the fair at any other place until the guarantee fund or bond above provided for shall have first applied to that purpose.

"As soon as practicable, said board shall advertise for, solicit and receive bids and propositions from the various cities and counties of the State, for the permanent location for said fair and shall permanently locate it at the city or place offering and affording, in the judgment of said board, the best inducements for its permanent location, taking into consideration financial inducements, the geographical location of the place, its railroad facilities, and all other matters pertaining to, or which would effect, the permanent welfare and interests of said fair.

"When said board shall have determined upon a place for the permanent location of said fair, it shall have the power to accept donations of lands or other thing of value, and may hold same by deed or contract for the use and benefit of said fair, and may purchase grounds and erect proper buildings and other improvements on same and on donated grounds and pay for same out of any funds it may have on hand from donations or profits from building fairs, but shall not expend any part of the annual appropriation therefor. Said board shall keep any buildings thus owned by it insured in good and solvent fire insurance companies to the reasonable value of such buildings.

"Said board is authorized to accept the donations of lands or other things of value, as above provided, conditioned upon the permanent location and continuation of said fair at the place making such donations and upon the continuation of the present State appropriation for said fair, and or individuals making same, upon the discontinuance of said fair or said appropriation: Provided, Should any such donated grounds be enhanced in value by the erection of improvements thereon by said board out of the funds of said fair, by the State, then the said board, or the State, shall be reimbursed and shall have a claim and lien upon said lands to the extent of the value of such improvements at the time of the discontinuance of said fair or said appropriation.

"The sum of fifteen thousand dollars annually is hereby appropriated to be used for premiums alone to be paid on or before the first day of July of each year, at which time the Auditor shall draw his warrant on the State Treasurer for said sum in favor of the chairman of said board. Said chairman shall execute bond to the State of Kentucky, to be approved by the Auditor, in the sum of fifteen thousand dollars, for the faithful disbursement of such money according to the provisions of this act. Said board shall, within sixty days after holding such annual State Fair, render to the Auditor of the State an itemized statement showing the disbursement of such appropriation, which itemized statement shall be embodied in the State Auditor's report. The board of managers of the State Fair shall not give to any person a free pass or ticket to said State below that charged the general public.

"Section 4. Any part of the money unexpended shall be refunded by

812 *Seventeenth Biennial Report Bureau of Agriculture,*

the chairman of said board to the State of Kentucky at the time of making the report required herein.

"Section 5. Any profits derived from the fair shall go into a sinking fund to be used for succeeding fairs or for the purchasing and providing of permanent grounds or buildings when permanently located by the State.

"Section 6. Any profits heretofore derived from said fair shall, upon demand of the chairman of the Board of Agriculture, Forestry and Immigration, to be paid to said board by the treasurer of the Kentucky Live Stock Breeders' Association, or other person or persons holding such profit, but said board shall, out of any funds thus turned over to pay it, pay off and discharge all just debts and obligations incurred by said Kentucky Live Stock Breeders' Association on account of said fair, when amount turned over to it by said association.

"Section 7. All claims and demands due and belonging to the Kentucky Live Stock Breeders' Association on account of the Kentucky State Fair, or in any way pertaining thereto, are hereby transferred to, and vested in, the Board of Agriculture, Forestry and Immigration, with power to enforce collection by legal proceedings, compromise or other appropriate means, and with power to carry out any proceedings heretofore begun by the Kentucky Live Stock Breeders' Association, for the collection of any such demands."

Approved March 21, 1906.

LABOR INSPECTOR.

CHAPTER 52.

An act to amend an act, entitled "An act to make it unlawful to employ a child less than fourteen years of age in workshops, mines, mills or factories," and to regulate the employment, use and protection of child labor in mills, mines, factories, etc.

Be it enacted by the General Assembly of the Commonwealth of Kentucky.

Section 1. No child under sixteen years of age, employed in any manufacturing establishment, mine, mill or workshop in this Commonwealth shall be required, permitted or suffered to work therein more than sixty hours in any one week, nor more than ten hours in any one day, unless for the purpose of making a shorter work day on any one day of the week, and in no case shall any child under sixteen years of age work in any manufacturing establishment, mine, mill or workshop after seven o'clock in the evening or before six o'clock in the morning of any day; and every person, firm, corporation or company, employing any child under sixteen years of age in any manufacturing establishment, mine, mill or workshop shall post and keep posted in a conspicuous place in the office a printed notice, stating the number of hours of labor per day re-

quired of such persons for each day of the week, and the number of hours of labor expected or permitted to be performed by such persons shall not exceed the number of hours of labor so posted as being required. The time of beginning and ending the day's labor shall be the time stated in such notice.

Section 2. No child under fourteen (14) years of age shall be employed at any time in any factory, workshop, mill or mine, unless said child have no other means of support. No such child shall be employed in any mercantile establishment, nor in any service of any telegraph, telephone or public messenger company, laundry, printing establishment, except during the vacation of the public schools. No child under sixteen (16) years of age shall be employed at any occupation dangerous or injurious to health or morals. And in event of disagreement between the Labor Inspector and proprietor, the city or county physician shall be called in as referee, and his decision shall be final. It shall be the duty of every person employing children, to keep a register in which shall be recorded the name, birthplace, age and place of residence of every person employed by him under the age of sixteen years; and it shall be unlawful for any proprietor, agent, foreman or other person in or connected with a manufacturing establishment, mine, mill or workshop to hire any child under the age of sixteen years to work therein without there is first provided and placed on file in the office an affidavit made by the parent or guardian, stating the age, date and place of birth of said child. If said child have no parent or guardian, the said affidavit shall be made by the child, which affidavit shall be kept on file by the employer, and said register and affidavit shall be produced for inspection on demand by the Labor Inspector. There shall be posted conspicuously in every office of every factory, mill, workshop or mine, where children under sixteen years of age are employed, a list of their names, with the ages respectively. The Labor Inspector shall have the power to demand a certificate of physical fitness from the city or county physician in the case of the children whom he deems physically unable to perform the labor at which they may be employed, and shall have the power to prohibit the employment of any child that can not obtain such a certificate.

Section 3. No person, firm or corporation shall employ or permit any child under the age of sixteen years to have the care, custody, management of, or to operate any elevator, nor shall any person under sixteen years of age be employed at sewing belts or assist in sewing bets.

Section 4. It shall be the duty of the owner of any manufacturing establishment, or his agents, superintendents or other person in charge of and supplied therein, belt shifters, or other safe mechanical contrivances for the purpose of throwing belts on or off pulleys; and, whenever practicable, machinery therein shall be provided with loose pulleys. All vats, pans, saws, planes, cogs, gearing, belting, set screws and machinery of every description therein, which is palpably dangerous, where practicable, shall be properly guarded, and no person shall remove or make ineffective

any safeguard around or attached to any planer, saw, belting, shafting or other machinery, or around any vat or pan, while the same is in use, unless for the purpose of immediately making repairs thereto, and all such safeguards shall be promptly replaced. No person under eighteen years of age shall be allowed to clean machinery while in motion.

Section 5. Suitable and proper wash rooms and water closets shall be provided in each manufacturing establishment, and such water closets shall be properly screened and ventilated and be kept at all times in a clean condition; and if women and girls are employed in such establishment, the water closets shall have separate approaches and be separate and apart from those used by men. All closets shall be kept free from obscene writing and marking. A dressing room shall be provided for women and girls when required by the Labor Inspector in any manufacturing establishment in which women and girls are employed.

Section 6. Every person, firm, corporation, association, individual or partnership employing girls or adult women in any manufacturing, mechanical or mercantile industry, laundry, workshop, renovating works or printing office in this Commonwealth, shall provide seats for the use of girls and women so employed, and shall permit the use of such by them when not necessarily engaged in the active duties for which they are employed.

Section 7. The walls and ceilings of each room in every manufacturing establishment shall be lime-washed or painted, when, in the opinion of the Labor Inspector, it shall be conducive to the health or cleanliness of the person working therein.

Section 8. That the grand jury shall have inquisitorial powers to investigate violations of this act, and that judges of the circuit courts of the State shall specially charge the grand jury at the beginning of each term of the court to investigate violations of this act.

Section 9. The words "manufacturing establishment," wherever used in this act, shall be construed to mean any mill, factory or workshop where labor is employed.

Section 10. A copy of this act shall be conspicuously posted and kept posted in each work room of every manufacturing establishment, mill, mine or workshop in this Commonwealth.

Section 11. Any person who violates any of the provisions of this act, or who suffers or permits any child to be employed in violation of its provisions, shall be deemed guilty of misdemeanor, and, on conviction, shall be punished by a fine of not more than fifty dollars for the first offense, and not more than two hundred dollars for the second offense. —

Section 12. The provisions of this act shall not apply to the handling of fruits and vegetables in season, and the delivery of tobacco at the warehouses, and preparing same for the manufacturer.

Section 13. All laws and parts of laws in conflict with the provisions of this act are hereby repealed.

Approved March 17, 1906.

ABSTRACTS OF KENTUCKY LAWS AS APPLIED TO FARMERS.

(By Bennett H. Young, Attorney at Law, Louisville.)

During the earlier days of the history of Kentucky, farmers were its chief litigants. For the first fifty years of the States life, the courts were kept busy in settling land cases. The decisions of Kentucky, delivered by able lawyers then on the bench, became the standards of land titles and real estate questions throughout the entire country. This arose from the fact that Kentucky was laid out in a peculiar way. Surveyors were sent from Pennsylvania and Virginia to survey land under patents or grants to various individuals. The lines were run by the course of streams and trees as corner stones, and in this way many of the surveys overlapped each other, and this overlapping of the surveys and the date of surveys caused a tremendous amount of litigation among land holders in the State, which even to this day has not been entirely cleared off. But in the last thirty years, the farmers, as land owners, have ceased to be chief litigants; corporations have taken their places, and they are now those oftenest before the courts, either as plaintiffs or defendants.

But it is important that the farmers should have some general idea of the laws of Kentucky in so far as they affect them.

AGRICULTURAL COLLEGE.

The State Agricultural College has what is known as an agricultural and mechanical college located in Lexington. The chief value of this to the farmers is, first, the analysis of fertilizers, and, second, the examination of adulterated food, inspection of nurseries and protection of mining engineering. The law relating to fertilizers requires that there shall be attached to each package a label containing the formula. Any person in Kentucky who purchases commercial fertilizers for his own use and not for sale may take a sample of fertilizer and send it to the director of the Kentucky Agricultural Experiment Station at Lexington, where it shall be examined for him free of charge. The directors of the Kentucky Experiment Station are also required to make an analyses of samples of food which are suspected of adulteration. Bulletins are also issued by the Kentucky Agricultural and Mechanical College which every farmer is entitled to receive by sending his name to the director of the Kentucky Agricultural Experiment Station, Lexington, Ky.

ANIMALS.

Under the laws of Kentucky, horses, etc., are well cared for when posted as estrays, and the owner can any time within three years after the discovery of the fact that they are in the possession of any one else, recover them upon payment of reasonable charges for their keeping during the time.

Further, under the laws in regard to animals, it is the duty of the county judge or justice of the peace to notify the owner and require him to kill and bury any animal afflicted with glanders, and before the animal or animals are killed, a justice of the peace or two justices of the peace shall cause the animal to be valued, the valuation not to exceed fifty dollars for any one animal, and the valuation of said animals, together with the fact of its destruction, shall be certified by the two justices or the county judge to the county court, together with the name of the owner, and spread upon the records of the court, and, upon presenting a certified copy of these records, the owner may be paid out of the county funds the sum which has been allowed.

If any animal is diseased with glanders, and the owner refuses to destroy the animal, he thereby subjects himself to a fine of not less than one nor more than five hundred dollars, enforceable by indictment.

Whenever any infectious disease affecting cattle shall exist in this State it shall be the duty of the State board of health to take measures to promptly suppress and to prevent the same from spreading. In such cases the State board of health has the power to issue its proclamation stating that infectious diseases exist in any certain district of the State and warning the owners of animals to seclude all animals in their possession that are affected with this disease or have been exposed thereto, or that any premises where such disease exists or has existed be put in quarantine at the owner's expense. To call on the sheriffs and deputy sheriffs to assist in enforcing or carrying out the provisions of its proclamations, to employ a veterinary surgeon and such other persons to prescribe regulations for the destruction of such animals affected for the disposition of their carcasses, and all objects which might in any way convey the infection. However, no animals shall be destroyed by said board until they are examined by a veterinary practitioner and declared to be infected. Any person who knowingly fails to comply with the orders thus issued is subject to a fine of not less than two hundred dollars nor more than one thousand. There is also a penalty for selling or for driving said infected cattle upon the public highways. In order to carry out the provisions of these acts the board may engage and obtain the services of any veterinarian in the employ of the United States Government. There is also an appropriation by the State to assist in carrying out such orders as may be made in cases of this kind.

DOGS.

Persons owning dogs in the State of Kentucky may list any such dog with the clerk of the county court and shall pay to such clerk the State tax thereon of \$1. The clerk keeps a record of such listing, and all dogs which have been so registered are declared to be personal property for any and all purposes.

For the protection of sheep justices of the peace may, upon proof that any dog has killed or wounded sheep, order such dog to be killed at the expense of the owner.

The same rule applies in case of dogs that are mad.

Persons owning dogs shall be liable to the party injured for the damages done by such dog unless the party injured shall be upon the premises of the party owning the dog, or unless he shall so worry the dog as to cause him to inflict the injury that he may complain of.

ARBITRATION AND AWARD.

Under the laws of the State of Kentucky, any and all controversies which might be subject of a suit may be submitted to the decision of one or more arbitrators, or two arbitrators and an umpire. The manner of this settlement is regulated by the civil code, or it may be in writing and the agreement of settlement shall be binding on the parties thereto when it states the matters submitted and who are the arbitrators. Any award given by these arbitrators must be in writing signed by them and the umpire, if there is an umpire, and shall be a final settlement of the controversy which has been submitted to them.

No award made in this way shall be set aside for want of form; but courts of equity shall have power over such awards of equitable principles.

ASSIGNMENTS.

Under the laws of Kentucky all assignments voluntarily made shall be for the benefit of all creditors in proportion to their respective claims, the expenses of the trust, of course, being deducted first; except, of course, that any liens upon the property conveyed shall be first satisfied. If the property is not sufficient to satisfy the lien, the lien creditors shall have the right to present the remainder of his debt as a claim against the estate in the same manner as creditors whose claims are not secured. The provisions of Act of Bankruptcy apply of course to farmers as well as to firms, corporations, etc., except in that, while a firm or corporation may be forced by petition into involuntary bankruptcy, a farmer can only become bankrupt voluntarily. When an assignor reserves any of his property under the

exemption law, which he is entitled to do, the court appoints three competent housekeepers to set apart to the debtor the property claimed, and if the land is exempt, competent surveyor shall be ordered to lay off the homestead exemption so set apart by the appraisers.

BARBERING.

There is also in the laws of the State of Kentucky an act to regulate the practice of barbering, which requires that each barber shall obtain a certificate of registration showing that he is duly qualified by having studied the trade at least three years, and that he is free from all infectious diseases, and he then must operate the shop under proper sanitary regulations.

BOATS.

There is an act that it is unlawful for any person to make his residence upon any boat upon any of the rivers within this State for the purpose of engaging in any business, trade or traffic, or any purpose whatsoever without first obtaining from the clerk of the county court in which said boat is to lie and do business, a license so to do for himself and his family, which license shall be granted only upon proof of the good character of the applicant and payment of the license fee. This license must describe the boat and the business to be conducted.

BONDS.

The Commonwealth of Kentucky is by a statute authorized and empowered to issue its bond in the aggregate amount of five hundred thousand dollars, payable in ten years from date and bearing interest at the rate of four per cent. Such bonds are placed in the hands of a board of sinking fund commissioners for sale for account of the State. The proceeds of the sale of such bonds shall be used only in payment of that part of the existing indebtedness of the State which has been created on account of the several charitable institutions and asylums. Any county or magisterial district may issue bonds to discharge its debts for railroad purposes for an amount not exceeding the amount of such outstanding bonds and interest.

CANADA THISTLES.

By an act of the Legislature, as a protection to the interests of land owners, it is the duty of any person or corporation holding lands in this

Commonwealth on which any weed commonly known as Canada thistles may be growing, to cut such weeds so as to prevent its ripening and so spreading, and any person who knowingly neglects or refuses to comply with this provision shall be subject to a fine, and it is the right of any person or persons who consider themselves injured by the neglect of parties owning land upon which such thistles grow to give notice in writing to such persons, and on their then neglecting or refusing to cut and destroy such thistles it is lawful for the person giving the notice to enter upon the land and themselves destroy the thistles and they shall be entitled to recover from the owners of the land compensation for so doing.

CEMETERY COMPANIES.

It is required under the laws of the State of Kentucky that the directors and trustees of cemetery companies shall report the condition of said companies, of all moneys, land, real property and assets of every kind, together with the liabilities of said corporation on the first day of every year, and directors or trustees failing so to do may be forthwith removed.

CHARITABLE INSTITUTIONS.

There are in Kentucky for the benefit of the State various charitable institutions, among which are the Eastern Kentucky Asylum for the insane at Lexington; the Central Kentucky Asylum for the Insane at Lakeland; the Western Kentucky Asylum for the Insane at Hopkinsville; Kentucky Institute for Feeble Minded Children at Frankfort. Such institutions shall have perpetual succession, and may sue and be sued, contract and be contracted with, receive gifts or devise in aid of the objects for which they were organized, and shall have all powers and rights incident to corporations which are necessary and proper for the purposes for which they were organized. These institutions have a board of managers, composed of nine discreet men, appointed by the governor, with the advice of the Senate, whose term is four years. They shall report to the governor yearly the amount of income and expenditure, and shall report to the auditor every three months the number of inmates and the condition of the institution generally.

The State provides for these institutions such physicians as are necessary for the care of the inmates and also, in each institution, at least one woman physician to look after the female inmates of said institution.

In these institutions such inmates as have no means are kept and cared for in all ways by the State and at its own expense.

KENTUCKY INSTITUTE FOR DEAF MUTES.

There is also an institute for deaf mutes under the control of the Commonwealth in the same way, where such unfortunate children are cared for and educated. Indigent children, residing within the State, are received into the institution, maintained and educated gratuitously so far as the funds of the institution permit. And it is lawful for the trustees of this institution to receive pupils from other States, provided the expense of their maintenance is defrayed by such State or some individual or society; provided that such admission does not exclude any pupil of this State entitled to admission.

Pupils are allowed to remain in this institution for the purpose of maintenance and education for the period of five years, and there is an appropriation made for the support of each pupil.

KENTUCKY INSTITUTE FOR THE BLIND.

There is also an institution for the education of the blind in the city of Louisville. This institution is under legislative control and pupils may be received therein, and in case of meritorious action on the part of the pupil, may be granted privileges in the way of larger instructions. And there is allowed for the support and education of each pupil in this institution the sum of \$140.00.

The blind children of both races are received into this institution, without any charge, each with their separate buildings in which to reside.

CHARITABLE USES AND RELIGIOUS SOCIETIES.

All grants, conveyances, devises, gifts, appointments and assignments made in this State in due form of law for charitable uses and religious societies, colleges, universities, navigation, bridges, ports, havens; highways; houses of correction, etc., shall be valid, and the trustees of any institution to which any gift of this kind has been made shall have power to prosecute for the use of the society any suit necessary for the maintenance of the institution's rights.

CHILDREN DESTITUTE OR MALTREATED.

In this State any child of tender years found begging or soliciting alms in any manner, or any child of such age not having any home or place of abode, or who has been abandoned or otherwise treated with cruelty by its parents or other persons acting as their guardians who fail to support them

and deprive them of the necessities of life, or of the means of support; being an orphan or a child of such parent who is idle or without any visible means of support, or who has been convicted of a crime against the person of such child, may, upon proper affidavit and warrant, be arrested and brought before a court or magistrate; such court or magistrate may then commit the child to any charitable reformatory or other institution such as are authorized to take care of paupers. No person shall for gain or reward employ or cause to be employed, exhibit or use for the purpose of exhibiting or employing any child actually or apparently under the age of sixteen years, nor shall employ such child in giving exhibitions for reward, begging or receiving alms, or in peddling or in wandering occupation, or in any immoral occupation, or in the exhibition of any such child when insane or idiotic, or in any practice or any exhibition which shall endanger the life, limbs, health or morals of the child; any person guilty of the foregoing practices shall be guilty of misdemeanor and subject to punishment and fine under the statutes of the State of Kentucky.

Any person who shall willfully and unnecessarily expose any child to inclement weather so as to endanger their health or limbs or expose any child under sixteen years of age shall be fined heavily and confined in the work house or county jail or both; any one wilfully neglecting to provide for the support of his or her minor child who is actually or apparently under the age of fourteen years shall be punished by fine not exceeding twenty dollars.

Also under the laws of the State of Kentucky the peace officers of the State of Kentucky have the power upon private affidavit and warrant to arrest and bring before the court persons guilty of these acts; and commissioned agents for the prevention of cruelty have the same rights and powers as legal peace officers under the laws of this State.

WHEN AND WHERE UNLAWFUL TO EMPLOY.

Under the laws of this State it is unlawful for the proprietor, foreman of a factory, workshop or mine, to employ children under fourteen years of age and they shall not employ children apparently of such age except upon sworn statement of parents or guardian that the child is more than fourteen years of age.

KENTUCKY CHILDREN'S HOME SOCIETY.

There is in the State of Kentucky an institution called the Kentucky Children's Home Society, which is provided for by the Commonwealth of Kentucky, and for it an appropriation is made yearly.

No person or corporation or institution shall bring or send or cause to be brought or sent into the State of Kentucky any dependent child.

CITIZEN'S EXPATRIATION AND ALIENS.

All persons born or naturalized in the United States and subject to the jurisdiction thereof, and who resides in the State of Kentucky shall be and are deemed citizens of this State.

An alien, not being an enemy, after having declared his intention of becoming a citizen of the United States, is enabled to recover, inherit, hold, and pass by descent, any interest he may have in property, personal or real, in the same manner as if he were a citizen of this Commonwealth.

THE KENTUCKY CONFEDERATE HOME.

There is authorized by an act in the State of Kentucky an Institution called "The Kentucky Confederate Home," for the purpose of providing for the maintenance, care and protection of the Confederate veterans of this State during the balance of their lives. This institution is under the control and management of trustees and is maintained by a yearly appropriation of \$125 for each inmate thereof.

LIBERTY OF CONSCIENCE.

All persons committed to any State prison, reform school, house of refuge or any place of confinement in this State shall be allowed spiritual advice and spiritual administration from any recognized clergyman of the denomination or church to which such person belongs or has belonged, prior to their being committed or received into such prison, school, house of refuge or other place of confinement.

They are entitled to such administration and in such manner as will secure to them the free exercise of their religious belief, and such clergymen shall have the right to visit such inmates at any time and to communicate freely with them and it shall be the duty of the board of trustees of such institution to set apart not less than one hour on the first day of each week and at such time, some clergyman of good standing in any church or denomination may impart moral or religious instructions to the inmates, and the right of conscience and the free exercise thereof shall always in such institutions be scrupulously respected and regarded.

CONVEYANCES.

The owner of any land over twenty-one years of age may convey any interest he may have therein, not in the adverse possession of another, but no estate of inheritance or free hold, for the term of more than one year, unless it shall be conveyed by deed or will.

Deeds executed in this State may be admitted of record on proper acknowledgment before the clerk or notary public. Deeds executed out of the State shall be certified to by the clerk of a court or his deputies. Deeds executed outside of the United States may be admitted of record when certified to by any foreign minister, or consul, or secretary of litigation, or secretary of foreign affairs.

CORPORATIONS.

Any number of persons, not less than three, may associate to establish a corporation for the transaction of any lawful business. At least 50 per cent. of the capital stock must be subscribed before it shall be authorized to transact business.

BANKS.

Any number of persons, not less than five, may associate to establish a bank with a capital of not less than \$15,000, and in cities having a population of 50,000 or more, not less than \$100,000.

PRIVATE BANKERS.

Persons may engage in business as private bankers, but not with less than a paid up capital of \$10,000.

TRUST COMPANIES.

Any person or persons, not less than seven, may associate to establish a corporation for the purpose of conducting a trust company.

INSURANCE COMPANIES.

Any number of persons, not less than thirteen, may associate to establish an insurance company.

RAILROAD COMPANIES.

Any number of persons, not less than seven, may associate to form a corporation for the purpose of conducting and operating a railroad, whether the same be steam or electric.

For the protection of persons traveling on and over said railroad, it is provided that no bridge or passway shall be constructed over any railroad at a height of less than twenty-two feet above the track.

Such railroad companies are required to give notice of all accidents to the railroad commissioners, who are to provide for the safe transportation of freight and passengers.

Such railroad company so authorized to conduct and maintain a railroad, shall have the power, upon the taking of such steps as required by the statutes, to condemn any land in its right or way for the construction and operation of its road and the value of the land taken is fixed by commissioners appointed for this purpose, subject to the exceptions that may be filed by the owner of the land.

CHARITABLE INSTITUTIONS.

Any number of persons may associate to form a corporation, society or association without capital stock for religious, charitable or educational purposes from which no pecuniary profit is to be derived.

COSTS.

Any poor person residing in the State of Kentucky is allowed by the court to prosecute or defend any action without paying costs. If necessary he shall have counsel appointed by the court to perform all necessary and needful services without fees, except such as may be incurred in the case, recovered from the opposite party.

POWERS OVER REAL ESTATE AND PUBLIC LANDS.

An actual settler on any vacant or unoccupied land shall have a pre-emption right to such an amount of land as shall not exceed one hundred acres.

LEVEES FOR PUBLIC BENEFIT.

The county judge of any county in this State shall have the power, where the same is needful, to establish any levee along any river or water course within said county and any person who shall wilfully damage or destroy any such levee is guilty of a felony.

COURTS OF JUSTICE.

The courts of the State consist of justices, quarterly, county and circuit court and court of final resort, or court of appeals.

Any person wilfully removing fences, or cutting down or destroying the corner tree or stone of another in this State, or of any tract of land is guilty of felony and it is unlawful for any person without the consent of the owner to carry away timber or any other personal property of another enclosed by his fence or on his premises.

ROADS AND PASSWAYS.

Any person who obstruct a public road or passway is guilty of a felony and such person obstructing such road or passway and thereby causing the death of a passerby is guilty of murder.

FELONIES.

There is a provision in the statutes against the cutting down or carrying away of timber upon the lands of another. There is also a provision in the statutes against persons using the marks or brands on cattle belonging to another. There is a provision in the statutes against any person knowingly defacing the marks or brands on any cattle. No person shall carelessly or knowingly mistreat a horse or other beast whether his own or any one else's, as he shall be subject to a fine.

FISH.

There is a provision in the statutes against the maiming or injuring of fish and against parties polluting the waters of any pond or streams whether public or private by the leaving of poison or drugs in fishing streams. No drugs or medicated bait, hunting or dynamite is allowed to be used in streams and no person shall use any seine or net other than a dip net.

There is a provision in the statutes against hunting upon the lands of another and against the leaving open of gates or breaking of fences.

OFFENSES AGAINST PUBLIC PEACE.

No person shall disturb religious worship, or interrupt a public speaker, engage in a breach of the peace, challenge to fight a duel, or carry a challenge for another are offenses against this State.

OFFENSES AGAINST PUBLIC HEALTH.

There is a provision in the statutes against any person knowingly selling the flesh of any animal dying otherwise than by slaughter.

Also against the selling of adulterated food or drink, and against the polluting of water courses.

No person shall sell or cause to be sold any manufactured honey, unless said honey is so represented and designated; and any person selling vinegar shall label and brand each package so as to designate to the manufacturer of what material the vinegar is made.

No person shall sell, supply, or offer for sale any oleaginous substance as butter, other than that produced from unadulterated milk or cream, unless the same shall be marked or the packages containing same shall be marked so as to show to the purchaser thereof that it is not genuine butter

There is a like provision against manufactured lard.

OTHER OFFENSES.

It is unlawful in this State for any person to knowingly enter for competition for any purse, prize, premium or sweepstake offered or given by an agricultural or other society, any horse under an assumed name or out of its proper class, and the name of any horse after it has once competed in any race or prize ring shall not be changed except in such a public manner as is prescribed by State associations.

No person shall bring into this State any cattle known as Texas cattle.

CURRENCY.

It is not lawful to make or pass a note or bill of an institution of less value than \$5.00.

Certificates of deposit or of stock are deemed to be within the prohibition of this chapter, when issued so as to pass by delivery.

DESCENT AND DISTRIBUTION.

Any person dying in this State, having title to any real estate or inheritance if he die intestate, it shall descend to his children and their descendants; if none, then to his father and mother. Collaterals of half blood shall inherit one-half as much as those of the whole blood, and, in making a title by descent, it shall be no bar to the party that any ancestor is, or has been an alien. The estate of bastards shall be the same and be distributed in the same manner as that of persons born in lawful wedlock, except that the inheritance shall go to the mother and her kindred in the same manner.

DRIFTS, LOGS, TIMBER.

Persons taking up boats, fleets of timber, rafts, saw-logs, etc., are entitled to receive from the owner compensation. But if any taker up of any property of this kind shall secrete the same and allow same to get aground and to be destroyed or injured, he shall be responsible to the owner.

Every dealer in such articles may adopt a brand of his own and use it in marking all timber belonging to him.

There is a penalty for fraudulently marking timber; also for abusing any one's brand.

LANDS.

Land to which the defendant has a legal title in fee for life, or for a term therefor in possession, reversion or remainder, may be taken and sold under execution, except when any real estate be conveyed and the consideration, or any part thereof, remains unpaid, and the grantor shall not have a lien for the same against *bona fide* purchasers, unless it is stated in the deed what part of the consideration remains unpaid.

HOMESTEADS.

Persons residing in this State, having a family shall have certain such articles exempt from execution as are necessary to carry on the work in which they are engaged as farmers, such furniture as bedding, etc., set out by the statutes, and provisions for each member of the family for one year, or, if they have not such provisions, they shall be allowed the sum of \$40 for each member of the family, and tools of mechanics, and libraries of ministers and attorneys at law to the extent of \$500.00 are exempt.

Wages of laborers, not to exceed \$50.00, shall be exempt, in addition to such personal property as set out in the foregoing. There shall be exempted to the owner of a homestead, unless he have mortgaged the same, or owes money for the purchase price thereof, a dwelling house, and the appurtenances thereto belonging, provided same shall not exceed in value \$1,000.00.

FENCES.

Every strong and sound fence of rails or plank or wire or wire and planks or iron or of hedge four and one-half feet high that cattle can not

creep through, or of stone or brick four and one-half feet high, or a ditch three feet deep and three feet broad, with a hedge two feet high or a rail, plank, stone, smooth or barbed wire or brick fence, two feet high on the margin thereof, the fence being so close that cattle can not creep through, shall be deemed a lawful fence.

All farmers shall maintain around their premises such as are deemed by the State lawful fences, and all or any cattle entering on another's ground over or through such fences may be taken up by the owner of the land, and, after giving to the owner of the cattle notice, shall have a lien on the cattle to indemnify him for any damages done by them. Persons owning adjoining lands may agree in regard to the erection of division fences, and the keeping of same in repair. In case either party neglects or fails to do his part in maintaining such fence or fences, he shall be liable for all damages done by reason of the trespassing of cattle or stock over such fences at any point where he was appointed to keep the same in repair. When a division fence is necessary, either party may require the other to erect his proportion of same, and, if he fails to do so, he may give him three months' notice, and at the end of such time erect such fence himself and recover the cost thereof from the other party.

RAILROAD FENCES.

Railroad companies owning roads, and operating them for five years, are to be on the same terms as land owners and are required to construct and keep a lawful fence on one-half the distance between their right of way and adjoining lands.

TREES.

It is unlawful for any person to keep any fruit tree that may be infected with contagious diseases and fungi, such being declared by the laws of the State to be a public nuisance.

All nurseries within the State shall be inspected by the entomologist and botanist of the State agricultural experiment station once a year and he shall notify the owner of such nurseries, the Commissioner of Agriculture and Statistics, the director of the State Agricultural Experiment Station and the president of the State Horticultural Society of the presence of destructively injurious insects or fungi in the trees, vines, plants or other stock of such nurseries, and nurserymen are required by the law to attach a certificate of examination to each package of trees stating that the whole of such stock has been examined by a State horticultural experiment agent and it has been found that no destructive insects infected such trees or vines, etc., and such nurseries shall furnish a certificate stating the same.

All trees, vines, plants or any nursery stock coming into this State from any other State shall be labeled with the name of the consignor and the name of the consignee, together with a certificate from the examiner showing that the contents have been examined by him.

GAME AND BIRDS.

All game birds and animals and nests of eggs on private property are protected by law. And it shall be unlawful to catch or attempt to catch or to kill such, except during a limited, stated period of the year, and at any other time during the year it shall be unlawful for dealers, marketers, shippers or any one handling game to receive or have same in their possession.

Non-resident hunters are required before hunting to take out a license in this State and to pay therefor the sum of \$25.

PROPERTY RIGHTS.

Marriage gives to the husband during the life of the wife no estate or interest in the wife's property owned at the time or acquired after the marriage; the wife has her property to her own exclusive use and free from the debts and control of her husband. A gift or disbursement of personal property between husband and wife is not valid as to third parties unless it be in writing and acknowledgment of record, but the acknowledgement of such writing shall not be valid to any such gift if it be fraudulent as to creditors or purchasers. At the death of either husband or wife the survivor shall have an estate for either his or her life of one third of all the real estate which the other owned in fee simple unless the right shall have been barred or relinquished and the survivor shall also have an absolute estate in one-half of the surplus personalty.

INSPECTION.

Suitable inspection warehouses outside of a city may be established by the county court, such necessary appliances to be provided, and when such houses are established in a city, an inspector may be appointed by the city council, otherwise by the county court; such inspectors are allowed fees by law, and shall be liable for the neglect of themselves or deputies, or the fault of either of them. No person shall use or imitate the brand or mark of another on the barrel or cask or hogshead. No inspector shall deal in the articles which he inspects. No person shall falsely pack any hogshead, barrel or cask, with the intention of deceiving the purchaser as to the quantity and quality which it contains.

INTEREST AND USURY.

Legal interest in this State shall be at the rate of 6 per cent. per annum, regardless of the amount loaned and the time allowed. Contracts for anything greater than the legal rate are void for excess, and the excess may be recovered from the lender.

LANDLORD AND TENANT.

Rent may be recovered by distress or judgment. After the assignment to the tenant, a lien is created upon the property so leased, and any of tenant's property on the premises is liable for the rent. All valid liens upon the personal property of a lessee, created before the property was carried upon the leased premises shall prevail against any judgment for rent. The landlord shall have a lien upon the produce of the farm, and the fixtures, household furniture, etc., of the tenant after the possession is taken under the lease. Such lien, however, shall not be for more than one year's rent nor for any rent which has been due for more than 120 days. The landlord shall have a superior lien on the property so removed for fifteen days from the date of its open removal. If by contract the landlord is to receive a portion of the crop produced in lieu of money for rent for land, there shall vest in him the right to his portion of such crop as soon as it is planted, although the crop may be raised by a person other than the one with whom he contracted. Any life tenant, remainder man, or reversioner, etc., is made liable by the statutes for such waste as he shall commit upon the estate.

LANDS.

County judges shall have power to order properly drained any ditch, drain or water course, within the county within which he has jurisdiction. The owners of lands shall be entitled to such damages as are incurred by the drainage, as well as for the lands taken in the construction of such ditches, etc.

MECHANICS AND MATERIAL LIEN.

The person who performs labor or furnishes material in the erection of a house or in any other structure, shall have a lien upon the said house and any land attached thereto and on any interest the owner may have or had in the same to secure the amount of his debt.

LIMITATIONS OF ACTIONS.

Actions for the recovery of real property can only be brought within fifteen years after the right to institute it first accrued to the plaintiff, or to the person through whom he claims, but in the case of infants or persons of unsound mind, or persons claiming through them, although the period of fifteen years has expired, they may bring the action within three years after the time the disability is removed.

Actions upon contracts not in writing, actions upon liability created by statute when no other time is fixed, etc., must be brought within five years.

Actions on merchants' accounts must be brought within two years. Actions brought for relief because of fraud or mistake can be brought within ten years from the time of the discovery of the fraud or mistake.

Actions for the recovery of stolen property may be commenced against any person having had the same in his possession within one year from the time the property is found by the owner and not after.

PERSONAL REPRESENTATIVES.

Every personal representative shall give bond for the faithful performance of his duties. They and their successors shall make settlements of their accounts when removed and each successor may prosecute or defend such actions as he may have commenced. If he become incapable or move out of the State, or otherwise becomes not fit to discharge the duties, he shall be removed upon notice being given.

No action against a personal representative shall be commenced until six months after his appointment.

PUBLIC ROADS.

The public may by application in any county, State, town or postoffice, in the event such roads are needed by the public, have such a road opened by filing a petition.

Whenever it is necessary that one citizen have a private passway over the land of one or more persons, the statutes entitles them, upon proper application, to have the said road opened.

SCHOOLS.

There is maintained throughout the State a uniform system of schools, supported by a common school fund apportioned amongst the districts of each county according to the number of pupils in said district between the

ages of six and twenty years. Children so attending the common schools of Kentucky may do so without expense.

The Superintendent of Public Instruction, together with the Secretary of State and Attorney General, are considered the State Board of Education. Said board is thereby authorized and given power to take and hold any real or personal estate and to dispose of same for the benefit of the schools, the common school system of Kentucky provides for the education of children, but not in such a way that any white child may attend any school kept for colored children, or any colored child attend a school kept for white children.

The trustees of each district of the common schools are vested with the power, and they and their successors likewise may hold and dispose of real estate and personal estate for the maintenance and benefit of the common schools of their district. Such trustee may take land by purchase or donation for the purpose of erecting thereon a school-house, and make and provide for the erection of same and contract for the necessary out-buildings and inclosures, etc., and in case they may not be able to secure a suitable situation for the school-house site, they may have the power to condemn land therefor in the same manner as railroads.

In case there be not sufficient funds subscribed for the erection of the said school-house, the district trustees may levy a per capita tax which shall not exceed one dollar for the school year, for a term of four consecutive years, in order to meet such emergency, or they may levy an ad valorem tax not to exceed twenty-five cents on the \$100, or both.

COMPULSORY EDUCATION.

The law provides that every parent, guardian, or any person in this State having control of any child between the ages of seven and fourteen years is required to send such child annually, at least eight weeks of which shall be consecutive, to some public or private school for children, unless such child can be and is taught at home such branches as are taught in the public schools, and it is the duty of the trustees to see that this law is observed.

STATE FAIRS.

Provision is made in the statute for an annual State Fair for the exhibition of agricultural, mechanical, horticultural, dairy, forestry, poultry and live stock. This fair is made free of any political appearance by the fact that the board of directors of the Kentucky Live Stock Breeders' Association are the directors of said fair. The State appropriates annually \$15,000 for the maintenance of this fair, and this is payable by warrant of the Auditor. Such money as may be unexpended at any fair shall be re-

funded by the treasurer of the association to the State, and any profits derived from any fair shall go into a sinking fund to be used for succeeding fairs.

ROADS.

Any county in the Commonwealth may appropriate any funds that it may have at any time, which are not already appropriated for some specific purpose, for the purpose of building and maintaining pike and gravel roads, provided a majority of the legal voters when the question is submitted to them shall vote for the same.

Upon written application to the county judge in any county asking for a vote in said county on the proposition to have free turnpikes, signed by a number of voters equal to 15 per cent. of the last vote, the county judge shall order an election at some term not within sixty days of the date of the order, to take the sense of the voters on the proposition to have free turnpike roads. If this proposition shall carry, the fiscal court shall acquire such toll roads as lie within the county, and the fiscal court may levy a tax from year to year on all estate of any kind assessed for State and county purposes, not to exceed in any year twenty-five cents on the \$100.00, for the purpose of paying for and maintaining such roads when they are acquired and all turnpike and gravel roads when thus acquired become public roads and shall be kept in repair by provision of the fiscal court.

WAREHOUSES.

Persons or corporations receiving tobacco, cotton, pork, grain, corn, wheat, rye, oats, hemp, whisky, coal, or any kind of produce or commodity of any description or personal property, shall be deemed warehouses, men, and shall give receipts for anything received into their warehouses, and such receipts shall be negotiable and transferable, and no receipt shall be issued unless the goods receipted for are in said warehouse, and if there be a lien on any property received into such a warehouse, the nature and extent of such lien shall be set forth in the receipt given. Such warehousemen shall keep a register in which they shall record a list of all things received, the name and residence of the owner, and the amount of charges. When charges for storage shall have been due for twelve months, unless it is otherwise provided by contract, the warehouseman may sell such property, or enough thereof to pay the charges, at public auction.

It shall be unlawful for any tobacco warehousemen, corporations or individuals to combine for the purpose of controlling or in any way interfering with the right of any one to bid on or purchase tobacco offered for

sale at any warehouse. Sales held at such warehouses shall be free and open, and there shall be no discrimination between purchasers.

WILLS.

The word will, taken in connection with a testament, shall always signify the last will and testament of the testator, unless otherwise specified. Every person of sound mind, more than twenty-one years of age, may by will dispose of any estate, right or interest in real or personal estate that he is entitled to at the time of his death, which would otherwise descend to his heirs or personal representatives, and, though he may become so entitled after the execution of his will.

No person under twenty-one years of age has any power to make a will, except in pursuance of a power especially given to that effect, and except that a father, though under twenty-one years of age, may appoint by will a guardian for his child.

Married women may dispose by will of any estate of which they may be possessed.

A competent person may execute a will by writing the entire will in his own handwriting and signing it.

All wills shall be in writing with the name of the testator subscribed by himself or by some other person in his presence and by his direction; and, if the will is not wholly written by the testator himself, the subscription shall be made or the will acknowledged by the testator in the presence of at least two credible persons as witnesses, who shall subscribe the will with their several names in the presence of the testator, and in the presence of each other.

The will of a person domiciled out of this State at the time of his death shall be valid as to his personal property in this State, if it is executed according to the law of the place where he was domiciled. Every will made by a man or woman shall be revoked by his or her marriage, except a will made in exercise of a power of appointment when the estate thereby appointed would not, in default of such appointment, pass to his or her heir, or personal representative or next of kin. The will of a testator is revoked by his subsequent marriage, although at the time of its execution an ante-nuptial contract was executed giving to the wife certain property. The marriage of the woman does not revoke the will previously made by her, when the will was made by the consent of the intended husband, and he by an ante-nuptial contract relinquished all interest in her estate. A will that is not revoked by the marriage of the party shall be revoked only by subsequent will or codicil, or by some writing declaring an intention to revoke same, executed in the same manner in which a will shall be executed, or unless the testator, or some person in his presence, and by his direction, shall cut, tear, burn, obliterate, cancel or destroy the same, or the signature thereto, with the intention of revoking it.

No will that is in any manner revoked shall be revived except by the re-execution thereof, or by codicil properly executed, and then only to the extent shown by the re-execution or codicil. No conveyance or other act subsequent to the execution of a will shall, unless it be by an act by which the will is revoked, prevent its operation with respect to such interests in the estate comprised in the will as the testator may have power to dispose of by will at the time of his death.

Should any witness who attests a will become incompetent thereafter, such incompetency will not invalidate the will. And if the will is attested by a person to whom, or to whose wife or husband, any beneficial interest in any estate is thereby devised, if the will may not be otherwise proved, such persons shall be competent witnesses. If a will charging an estate with debts is attested by a creditor, or the wife or husband of creditor, whose debts is so charged, such creditor shall be deemed a witness for or against the will.

An executor is a competent witness for or against the will. A will properly executed, in no way revoked, which is in existence at the time of the death of the testator, shall be construed as though executed immediately before his death.

If a will is made when a testator has children living, and a child is born afterwards which has never been provided for, nor expressly excluded by the will, he shall succeed to such portion of the testator's estate as he would have been entitled to if the testator had died intestate, but if such after-born child dies before he is twenty-one years of age, unmarried and without issue, his portion of the estate, or so much thereof as may be unexpended in his support and education, shall revert to the person to whom it was given by the will.

Wills shall be proven before and admitted to record by the clerk of the county court of the county of the testator's residence, or, if he had no place of residence in this Commonwealth, and the land shall be devised by his will, then it shall be admitted in the county where the land or the property thereof lies, or, if not and is devised, then in the county where he died, or in that county where his estate or part thereof shall be, or where there may be any debt or demand owing to him.

Appeals from the probate of wills may be taken from the county court to the circuit court of the county in which they are probated, and thence to the Court of Appeals.

Every will, or an authenticated copy of it, so admitted to record by any court, shall be recorded by the clerk thereof and remain in his office, except during such time as the same may be carried to another court under "*subpoena duces tecum*." A will may be deposited by the person making it, or any one for him, with the clerk of the county court in the county of his residence, and the said clerk shall safely keep same upon the payment of the fee of \$1.00, according to the directions made for the keeping of the same; it shall be delivered to the keeping of succeeding clerks, and to the testator, or upon the death of the testator to his representative.

KENTUCKY.

SKETCHES OF THE COUNTIES.

Alphabetically Arranged.

ADAIR COUNTY.

(Revised 1907 by W. K. Azbill.)

Adair was originally a part of Green county. It was established in 1801, the forty-fourth county formed, and was named in honor of General John Adair, a distinguished statesman and soldier who commanded the Kentucky troops at New Orleans and who subsequently became a senator and a member of the House of Representatives in the Congress of the United States.

The county lies on the waters of Green river which runs across the northern part of it from east to west. It is bounded by Green, Taylor, Casey, Russell, Cumberland, and Metcalfe. The watershed between Green river and the Cumberland traverses the southern portion of it. Crocus creek and its tributaries drain the portion south of this watershed; Big creek, Petty's Fork, Russell's, creek and Caney Fork and their tributaries, carry the drainage of the middle portion into Green river; and Casey's creek chiefly drains the portion north of Green river, contributing the greater part of the stain from the clays at its sources, which gives color and an appropriate name to this river. The water supply of the county is well distributed, abundant and unfailing.

The main watersheds in Adair county rise to an altitude of about four hundred feet above the beds of the rivers that receive its waters. The plateau is undulating and, at the summits and near the streams, hilly. In its geological aspect, the surface of the country lies between the Cambrian and the Carboniferous formations. Limestone is abundant in the middle section and, therefore, so is bluegrass. Building stone, clays of all varieties, and forest and farm products of all kinds that are found elsewhere in Kentucky, are plentiful in Adair.

Corn, wheat, oats, sorghum, broomcorn, hay and other grasses, stock peas and beans, tobacco; apples, peaches and small fruits and garden vegetables of almost every sort, are produced annually on every farm in the county, nearly. So also are horses, cattle, hogs and poultry. Sheep are less numerously raised. A county fair has been maintained for a number of years, agricultural papers are taken by many farmers, improved breeds of stock have been introduced, and farming and stock raising are carried on with an average degree of intelligence and success.

The last census report shows that Adair, with an annual production of 1,219,600 gallons of milk, 240,600 pounds of butter and 13,530 pounds of honey, bears a striking resemblance to the "Land of Promise." It produces more dairy, garden, and poultry-yard products; more corn, peas and beans; more orchard fruits and dried fruits; and a greater number of horses and hogs, than does the good bluegrass county of Boyle, which is mentioned for comparison because it is known everywhere as one of the most productive counties in the State. The total value of the farms of Adair county, with their equipments, live stock and supplies besides feed for stock, according to the last census report, is \$2,302,440.

The average price of farm lands, improved and unimproved, may be put down at \$8.00 per acre; but the prices vary greatly, depending upon location and the amount of improvements. Improved lands sell for prices ranging between \$8.00 and \$80.00 per acre. Unimproved lands are often bought for the timber on them, and are more than paid for from sales of this product alone.

Timber tracts and cultivated lands are intersperced throughout the county, and there remains a vast amount of timber of the best as well as of inferior quality. The lumber industry is very active, and the best of poplar, oak and hickory are being cut and shipped or used.

888 *Seventeenth Biennial Report Bureau of Agriculture.*

Except Grist and roller mills and saw mills, there are almost no manufacturies in the county. A sheet-iron-stove shop, a broom factory, two or three planing mills, a spoke factory and a half dozen power-equipped shops of mechanics, completes the list. There are no canneries, no creameries, no tanneries, no laundries, no ice factories, no limekilns, no potteries, no furniture factories; yet, the raw materials are plentiful and the need for the products of all these is felt.

There are five banks in the county, three in Columbia, the county seat, one at Cane Valley, six miles north, and one at Rolley, fifteen miles northeast of Columbia. The Bank of Columbia, organized in 1866, has a surplus of \$30,000, capital stock \$30,000, and its deposits are about \$180,000. The First National Bank of Columbia, organized in 1903, with \$25,000 capital stock, carries about \$110,000 of deposits. The Citizen's Bank of Columbia, organized in 1905, with \$15,000 capital stock, has \$63,681 of deposits. The Farmers' Bank, at Cane Valley, organized in 1906, with \$15,000 capital stock, has \$25,000 of deposits. The Farmers' Bank of Casey's Creek, organized in 1907, with \$15,000 capital stock, has \$14,000 of deposits. These deposits amount to approximately \$28.00 per capita for the population of the county.

Adair county has 14,000 inhabitants. It has no foreign colonies and very few persons of foreign birth or parentage. There are about 3,200 voters. Of these, 1,650 are Republicans, 1,400 are Democrats, and the remainder are Prohibitionists and Independents. Notwithstanding the party Prohibitionists are so few, the county has been "dry" for more than thirty years. The Baptists, Christians, Methodists and Presbyterians, are the only religious denominations having organizations and church property in the county. The Baptists have ten, the Christians eighteen, the Methodists eighteen, and the Presbyterians three congregations and places of worship in Adair. There are ninety-two Public Schools. The total pupilage is 5,043, of these 4,567 being white and 543 being negro children. For the former there are seventy-nine, and for the latter thirteen schools maintained by the State. There are two High Schools, both located in Columbia.

The Columbia Male and Female High School was incorporated in 1856, and its management is under the auspices of the Transylvania Presbytery. It is aided by an annual contribution of \$500 by the Ladies' Board of Home Missions of the Presbyterian church. The Lindsay-Wilson Training School, established in 1903, is an enterprise of the Louisville Conference of the Methodist Church South. The

property and equipment of these two schools are worth approximately \$30,000.00, and their attendance during the winter terms will aggregate about 400 students.

Two newspapers are published at the county seat, The Columbia Spectator, established in 1869, Republican organ, having a circulation of 1,600, and The Adair County News, established in 1897, Democratic, having a circulation of 2,450.

There are twenty villages and forty-six Post Offices in the county, and in connection with these there are about one hundred and twenty-five mercantile establishments. Some thirty of these are in Columbia, where there is a wholesale house, the only in the county.

Columbia has approximately 1,200 people. Most of them own their homes and are permanent residents. The court house and a majority of its buildings are modern and present a creditable appearance. The town is equipped with electric lights, but has neither water works nor a sewerage system. There are four churches having modern equipment and seating capacity for the whole population. The physical health and moral tone of the community are excellent.

Wood is the fuel used chiefly, and many families decline to quit the use of the old-fashioned fire-places and hearthstones. In many other ways the more primitive habits and customs of the original stock of Anglo-Saxon Americans, are in evidence in this community.

There is but one turnpike in the county, that from Campbellsville, which is the nearest railway station, twenty miles in length, half of which is in Adair. This road, though well patronized, is badly maintained. The lack of transportation facilities is the chief hindrance to the commercial progress of the county.

Telephones, both local and long distance, afford instant communication between Columbia and the several villages throughout the county and the whole country, the lines in the county aggregating about 150 miles and the number of subscribers being 145.

There are a good many historic circumstances and facts which Columbians may recall with commendable self respect. Of these it seems proper to mention that our renowned war Governor, Thomas E. Bramlette, whose wise diplomacy did so much for the State, formerly resided in Columbia; that Chief Justice Zachariah Wheat was an Adair county man and went from Columbia to Frankfort upon his election to the Appellate Bench; that Columbia was the girlhood home of Jane Lampton, the mother of "Mark Twain," who married here and remained here till within a very brief period before the birth

of her famous son, that Parker French, of Nicaragua Ministerial renown, a namesake of Judge Parker Hardin—and all the honored sons of Judge Hardin, so well known throughout Kentucky, were reared in Columbia; and that here, in a building which still stands on the Public Square of the town, was composed one stanza of that immortal poem, O'Hara's "Bivouac of the Dead."

Adair county is in the Thirty-seventh Legislative, Sixteenth Senatorial, Eleventh Congressional, Twenty-ninth Judicial and Third Appellate Districts of the Commonwealth of Kentucky.

ALLEN COUNTY.

(Revised 1907 by Emory G. Dent.)

Allen county was formed in the year, 1815, out of the southern parts of Warren and Barren counties, and extends to the boundary line between Kentucky and Tennessee.

The surface is hilly, but the soil is a limestone one, and very productive.

The county is exceptionally well watered; Barren river with its tributaries supply abundantly the northern and eastern portions, while Big Trammel and Drakes creek supply the southern and western portions; the central part being supplied by Little Trammel, Puncheon, Long, Walnut, Rough, Bays Fork and other small creeks.

The soil is principally adapted to corn, wheat, oats, hay, and tobacco. Alfalfa is a new crop that is being grown successfully.

The forests lands are well timbered, and at present the timber industry is the leading one in the county, but the supply seems inexhaustible.

One branch of the Louisville & Nashville railroad terminates at Scottsville, but the route has been surveyed to Stanford, Kentucky, and it is only a question of time when the road will be extended, giving the shortest route from Cincinnati to the south.

Land sells from twenty to one hundred dollars, according to improvements, and from five to fifteen for unimproved. On account of the vast amount of unimproved land, as a result of cutting the timber, Allen county offers an ideal location for the farmer with small capital. No county in Kentucky is improving more rapidly.

Scottsville, the county seat, is a fast growing town, with a population of eighteen hundred, an unusual business point, on account of large territory to draw from; the closest shipping point for several Tennessee towns and a large portion of Monroe county. Scottsville has just built by popular subscription, a ten thousand dollar school building. The lumber dealers, including the large spoke factory and ax-handle factory, paid out in the year 1906, for timber and labor, \$447,000.00. \$82,432 was paid for eggs, chickens, feathers, etc.

Scottsville has a modern electric plant, and is the headquarters of the Allen County Home Telephone Company. Allen has the most complete telephone system of any county in the State; practically every farm house being reached by telephone.

Scottsville is the best productive mule market in the State.

The county has a population of over eighteen thousand, and is situated in the Third Congressional, Second Appellate, Eighth Judicial, and Eleventh Senatorial Districts.

ANDERSON COUNTY.

Anderson county has had a separate existence since the year 1827. It is now bounded by the counties of Franklin, Woodford, Mercer, Washington, Nelson, Spencer and Shelby, and has an area of about 200 square miles. The population, almost entirely made up of the Anglo-Saxon race, is now about 13,000.

The county occupies two high and fertile plateaus, separated from each other by Salt river, which flows through the central part of the county. The land on top of the tablelands is greatly rolling, and the slopes leading down from the uplands to the rivers are somewhat precipitous. The Kentucky river, which borders the eastern portion of the county for a distance of about twenty miles, is navigable throughout the year. Salt river in the central part of the county and Chaplin on the southern border, are not navigable, but all of these streams are capable of furnishing unlimited water-power for all purposes. Besides these streams, the county is traversed in every direction by smaller ones, which afford the most ample supply of water for stock and crops under all circumstances. The scenery along the Kentucky river and its tributaries is unexcelled in its boldness and in its

picturesque features. The Salt river bottoms are famous for their fertility. The soil of the county is of a limestone formation, with a clay subsoil, and is generally fertile and productive. It is well adapted to the production of corn, wheat and tobacco. Oats, potatoes, garden vegetables and fruits of all kinds also do well in every part of the county. The tobacco grown in this county is always of the finest quality, and ranks among the best crops to be found in the Louisville and Cincinnati markets. Anderson county farmers, because of the fact that they always get the very best prices going for their tobacco, have made this the leading crop of the county. The large crops of timothy and clover that may be produced from a given quantity of ground, with the bluegrass which is indigenous, makes this one of the best counties in the State for stock farming. The number of cattle shipped from Anderson county to Eastern markets and to Europe, is increasing every year, and stock-raising promises soon to become one of our leading industries.

The timber is principally white oak and beech, with a fair proportion of sugar maple. The hickory, walnut and poplar has been nearly all cut off and disposed of in the markets. The timber left in the county is now being generally sawed by the people for fencing and repairs to the buildings. Very good timber lands can be bought in the county at from \$10.00 to \$20.00 per acre, according to location and distance from the railroad. Improved lands range in price from \$15.00 to \$75.00 per acre, the location having much to do with the price.

Numerous, and what is believed to be valuable, deposits of lead and zinc have been found in the county, within a few miles of the county seat, but because of a lack of capital, no great effort has been made to develop any of the mines.

There is undoubtedly natural gas in paying quantities in the county, and wells have been sunk in which the gas has burned steadily for a number of days before the pocket has been exhausted. Mineral wells and springs abound, which produce sulphur, iron, magnesia and salt water in abundance. Many of these springs and wells would afford ideal sites for summer hotels and health resorts.

The people of this country are almost entirely engaged in farming. The only manufacturing enterprises in the county are the numerous and famous distilleries and the cooper shops connected with them. The McBrayer, Searcy and Ripy whiskies are known the world over. The Saffel distillery which has not been in existence for so long a

time as those named above is rapidly acquiring a reputation second to none in Kentucky. The flouring mills, of which there are a number, are all doing a large business, both local and general. The Lawrenceburg Roller Mills, the Bond Mills at McBrayer and the Franklin Mills at Orr, are well and favorably known throughout the United States, and their brands are staple in all markets.

There is no doubt but there is a fine opening in this county for a number of manufactories, such as a canning factory for preserving fruit and vegetables. Fruits can be had in abundance and the soil is especially adapted to the raising of such vegetables as are used in these establishments, and the supply, with encouragement, could be made almost unlimited. A woolen and knitting factory would also find here a most excellent location for business.

The shipping facilities are as good as those of any other city of the same size to be found in the State or in the entire South. The railroads give Lawrenceburg sixteen passenger trains every day, and an increase in the volume of business would undoubtedly bring an increase of service. An electric railway to connect Lawrenceburg and Frankfort is projected and will in all probability be built in the near future. The Kentucky river is not only four miles from Lawrenceburg, and is a valuable competitor for the railroads in the matter of freight rates.

Anderson county has about 160 miles of turnpike road which is kept in the best of repair by the county. These roads were all made free some four years ago, and notwithstanding the prophecies made by pessimists at that time, they are kept in better condition for travel than under the old toll system. The county is doing as much or more than any other county in the State by way of furnishing good roads for the people, having expended \$40,000 within the last eight years for the construction of turnpikes, and yet the entire debts of the county will not exceed \$10,000. The few remaining dirt roads are kept in repair by the people of the county working under the direction of a surveyor appointed by the county judge. Improved methods of working these roads are being put into practice and within a very short time every road in the county will be macadamized, without the incurrence of any debt by the county.

Labor, both white and colored, is plentiful and can be had at reasonable rates. Unskilled labor here may be hired at from \$1.00 to \$1.50

picturesque features. The Salt river bottoms are famous for their fertility. The soil of the county is of a limestone formation, with a clay subsoil, and is generally fertile and productive. It is well adapted to the production of corn, wheat and tobacco. Oats, potatoes, garden vegetables and fruits of all kinds also do well in every part of the county. The tobacco grown in this county is always of the finest quality, and ranks among the best crops to be found in the Louisville and Cincinnati markets. Anderson county farmers, because of the fact that they always get the very best prices going for their tobacco, have made this the leading crop of the county. The large crops of timothy and clover that may be produced from a given quantity of ground, with the bluegrass which is indigenous, makes this one of the best counties in the State for stock farming. The number of cattle shipped from Anderson county to Eastern markets and to Europe, is increasing every year, and stock-raising promises soon to become one of our leading industries.

The timber is principally white oak and beech, with a fair proportion of sugar maple. The hickory, walnut and poplar has been nearly all cut off and disposed of in the markets. The timber left in the county is now being generally sawed by the people for fencing and repairs to the buildings. Very good timber lands can be bought in the county at from \$10.00 to \$20.00 per acre, according to location and distance from the railroad. Improved lands range in price from \$15.00 to \$75.00 per acre, the location having much to do with the price.

Numerous, and what is believed to be valuable, deposits of lead and zinc have been found in the county, within a few miles of the county seat, but because of a lack of capital, no great effort has been made to develop any of the mines.

There is undoubtedly natural gas in paying quantities in the county, and wells have been sunk in which the gas has burned steadily for a number of days before the pocket has been exhausted. Mineral wells and springs abound, which produce sulphur, iron, magnesia and salt water in abundance. Many of these springs and wells would afford ideal sites for summer hotels and health resorts.

The people of this country are almost entirely engaged in farming. The only manufacturing enterprises in the county are the numerous and famous distilleries and the cooper shops connected with them. The McBrayer, Searcy and Ripy whiskies are known the world over. The Saffel distillery which has not been in existence for so long a

time as those named above is rapidly acquiring a reputation second to none in Kentucky. The flouring mills, of which there are a number, are all doing a large business, both local and general. The Lawrenceburg Roller Mills, the Bond Mills at McBrayer and the Franklin Mills at Orr, are well and favorably known throughout the United States, and their brands are staple in all markets.

There is no doubt but there is a fine opening in this county for a number of manufactories, such as a canning factory for preserving fruit and vegetables. Fruits can be had in abundance and the soil is especially adapted to the raising of such vegetables as are used in these establishments, and the supply, with encouragement, could be made almost unlimited. A woolen and knitting factory would also find here a most excellent location for business.

The shipping facilities are as good as those of any other city of the same size to be found in the State or in the entire South. The railroads give Lawrenceburg sixteen passenger trains every day, and an increase in the volume of business would undoubtedly bring an increase of service. An electric railway to connect Lawrenceburg and Frankfort is projected and will in all probability be built in the near future. The Kentucky river is not only four miles from Lawrenceburg, and is a valuable competitor for the railroads in the matter of freight rates.

Anderson county has about 160 miles of turnpike road which is kept in the best of repair by the county. These roads were all made free some four years ago, and notwithstanding the prophecies made by pessimists at that time, they are kept in better condition for travel than under the old toll system. The county is doing as much or more than any other county in the State by way of furnishing good roads for the people, having expended \$40,000 within the last eight years for the construction of turnpikes, and yet the entire debts of the county will not exceed \$10,000. The few remaining dirt roads are kept in repair by the people of the county working under the direction of a surveyor appointed by the county judge. Improved methods of working these roads are being put into practice and within a very short time every road in the county will be macadamized, without the incurrence of any debt by the county.

Labor, both white and colored, is plentiful and can be had at reasonable rates. Unskilled labor here may be hired at from \$1.00 to \$1.50

picturesque features. The Salt river bottoms are famous for their fertility. The soil of the county is of a limestone formation, with a clay subsoil, and is generally fertile and productive. It is well adapted to the production of corn, wheat and tobacco. Oats, potatoes, garden vegetables and fruits of all kinds also do well in every part of the county. The tobacco grown in this county is always of the finest quality, and ranks among the best crops to be found in the Louisville and Cincinnati markets. Anderson county farmers, because of the fact that they always get the very best prices going for their tobacco, have made this the leading crop of the county. The large crops of timothy and clover that may be produced from a given quantity of ground, with the bluegrass which is indigenous, makes this one of the best counties in the State for stock farming. The number of cattle shipped from Anderson county to Eastern markets and to Europe, is increasing every year, and stock-raising promises soon to become one of our leading industries.

The timber is principally white oak and beech, with a fair proportion of sugar maple. The hickory, walnut and poplar has been nearly all cut off and disposed of in the markets. The timber left in the county is now being generally sawed by the people for fencing and repairs to the buildings. Very good timber lands can be bought in the county at from \$10.00 to \$20.00 per acre, according to location and distance from the railroad. Improved lands range in price from \$15.00 to \$75.00 per acre, the location having much to do with the price.

Numerous, and what is believed to be valuable, deposits of lead and zinc have been found in the county, within a few miles of the county seat, but because of a lack of capital, no great effort has been made to develop any of the mines.

There is undoubtedly natural gas in paying quantities in the county, and wells have been sunk in which the gas has burned steadily for a number of days before the pocket has been exhausted. Mineral wells and springs abound, which produce sulphur, iron, magnesia and salt water in abundance. Many of these springs and wells would afford ideal sites for summer hotels and health resorts.

The people of this country are almost entirely engaged in farming. The only manufacturing enterprises in the county are the numerous and famous distilleries and the cooper shops connected with them. The McBrayer, Searcy and Ripy whiskies are known the world over. The Saffel distillery which has not been in existence for so long a

time as those named above is rapidly acquiring a reputation second to none in Kentucky. The flouring mills, of which there are a number, are all doing a large business, both local and general. The Lawrenceburg Roller Mills, the Bond Mills at McBrayer and the Franklin Mills at Orr, are well and favorably known throughout the United States, and their brands are staple in all markets.

There is no doubt but there is a fine opening in this county for a number of manufactories, such as a canning factory for preserving fruit and vegetables. Fruits can be had in abundance and the soil is especially adapted to the raising of such vegetables as are used in these establishments, and the supply, with encouragement, could be made almost unlimited. A woolen and knitting factory would also find here a most excellent location for business.

The shipping facilities are as good as those of any other city of the same size to be found in the State or in the entire South. The railroads give Lawrenceburg sixteen passenger trains every day, and an increase in the volume of business would undoubtedly bring an increase of service. An electric railway to connect Lawrenceburg and Frankfort is projected and will in all probability be built in the near future. The Kentucky river is not only four miles from Lawrenceburg, and is a valuable competitor for the railroads in the matter of freight rates.

Anderson county has about 160 miles of turnpike road which is kept in the best of repair by the county. These roads were all made free some four years ago, and notwithstanding the prophecies made by pessimists at that time, they are kept in better condition for travel than under the old toll system. The county is doing as much or more than any other county in the State by way of furnishing good roads for the people, having expended \$40,000 within the last eight years for the construction of turnpikes, and yet the entire debts of the county will not exceed \$10,000. The few remaining dirt roads are kept in repair by the people of the county working under the direction of a surveyor appointed by the county judge. Improved methods of working these roads are being put into practice and within a very short time every road in the county will be macadamized, without the incurrence of any debt by the county.

Labor, both white and colored, is plentiful and can be had at reasonable rates. Unskilled labor here may be hired at from \$1.00 to \$1.50

picturesque features. The Salt river bottoms are famous for their fertility. The soil of the county is of a limestone formation, with a clay subsoil, and is generally fertile and productive. It is well adapted to the production of corn, wheat and tobacco. Oats, potatoes, garden vegetables and fruits of all kinds also do well in every part of the county. The tobacco grown in this county is always of the finest quality, and ranks among the best crops to be found in the Louisville and Cincinnati markets. Anderson county farmers, because of the fact that they always get the very best prices going for their tobacco, have made this the leading crop of the county. The large crops of timothy and clover that may be produced from a given quantity of ground, with the bluegrass which is indigenous, makes this one of the best counties in the State for stock farming. The number of cattle shipped from Anderson county to Eastern markets and to Europe, is increasing every year, and stock-raising promises soon to become one of our leading industries.

The timber is principally white oak and beech, with a fair proportion of sugar maple. The hickory, walnut and poplar has been nearly all cut off and disposed of in the markets. The timber left in the county is now being generally sawed by the people for fencing and repairs to the buildings. Very good timber lands can be bought in the county at from \$10.00 to \$20.00 per acre, according to location and distance from the railroad. Improved lands range in price from \$15.00 to \$75.00 per acre, the location having much to do with the price.

Numerous, and what is believed to be valuable, deposits of lead and zinc have been found in the county, within a few miles of the county seat, but because of a lack of capital, no great effort has been made to develop any of the mines.

There is undoubtedly natural gas in paying quantities in the county, and wells have been sunk in which the gas has burned steadily for a number of days before the pocket has been exhausted. Mineral wells and springs abound, which produce sulphur, iron, magnesia and salt water in abundance. Many of these springs and wells would afford ideal sites for summer hotels and health resorts.

The people of this country are almost entirely engaged in farming. The only manufacturing enterprises in the county are the numerous and famous distilleries and the cooper shops connected with them. The McBrayer, Searcy and Ripy whiskies are known the world over. The Saffel distillery which has not been in existence for so long a

time as those named above is rapidly acquiring a reputation second to none in Kentucky. The flouring mills, of which there are a number, are all doing a large business, both local and general. The Lawrenceburg Roller Mills, the Bond Mills at McBrayer and the Franklin Mills at Orr, are well and favorably known throughout the United States, and their brands are staple in all markets.

There is no doubt but there is a fine opening in this county for a number of manufactories, such as a canning factory for preserving fruit and vegetables. Fruits can be had in abundance and the soil is especially adapted to the raising of such vegetables as are used in these establishments, and the supply, with encouragement, could be made almost unlimited. A woolen and knitting factory would also find here a most excellent location for business.

The shipping facilities are as good as those of any other city of the same size to be found in the State or in the entire South. The railroads give Lawrenceburg sixteen passenger trains every day, and an increase in the volume of business would undoubtedly bring an increase of service. An electric railway to connect Lawrenceburg and Frankfort is projected and will in all probability be built in the near future. The Kentucky river is not only four miles from Lawrenceburg, and is a valuable competitor for the railroads in the matter of freight rates.

Anderson county has about 160 miles of turnpike road which is kept in the best of repair by the county. These roads were all made free some four years ago, and notwithstanding the prophecies made by pessimists at that time, they are kept in better condition for travel than under the old toll system. The county is doing as much or more than any other county in the State by way of furnishing good roads for the people, having expended \$40,000 within the last eight years for the construction of turnpikes, and yet the entire debts of the county will not exceed \$10,000. The few remaining dirt roads are kept in repair by the people of the county working under the direction of a surveyor appointed by the county judge. Improved methods of working these roads are being put into practice and within a very short time every road in the county will be macadamized, without the incurrence of any debt by the county.

Labor, both white and colored, is plentiful and can be had at reasonable rates. Unskilled labor here may be hired at from \$1.00 to \$1.50

844 *Seventeenth Biennial Report Bureau of Agriculture.*

per day. Mechanics and skilled laborers receive from \$1.75 to \$2.50 per day. Farm labor may be had for about \$18.00 to \$20.00 per month, without board, and at from \$10.00 to \$12.00 per month with board.

The school facilities of the county will compare favorably with those of any other county of the same population and wealth to be found in the State. The white schools furnish employment for about fifty teachers, the majority of whom are women. Nearly all of these hold first-class certificates and all of them are wide awake and progressive both in the matter of qualification and methods. The schools of Lawrenceburg give employment to six regular teachers, and have a special teacher of drawing and also of physical culture. So well is the work done here that graduates always take first rank in their classes when they enter the colleges of this or other States. There are no private schools in the county. The course of study in these schools is as broad and the instruction is as thorough as can be had in many cities of much greater population and wealth. The local tax fund for school purposes is thirty cents on each \$100 worth of property and there is no poll tax.

Lawrenceburg the county seat, has a population of 2,025, and is finely located on a plateau between the Kentucky and Salt rivers, and on the line of the Southern railway. It has five white and three colored churches, the white churches being Presbyterian, Christian, Baptist, Methodist and Catholic. It is well supplied with dry goods and grocery stores, which compete successfully with larger cities both in quality and price of the goods offered for sale. A cooperage factory, employing some twenty-five hands in the busy season, is located here. A large roller mill, having a capacity of 300 barrels per day, has been running twenty-four hours per day for more than two years, and ships its product all over the United States. There are here three drug stores, one hardware store, one bakery, three livery stables, two hotels and several boarding houses, one meat store, one newspaper office, three banks (with a united capital of \$195,000) and the largest insurance agency in the United States. Lawrenceburg is a city of some fifth class, has a Main street paved with vitrified brick, has some of the finest residences and business houses in the State, has a tax rate of only thirty cents on each \$100. More than fifty thousand dollars has been expended during the season just closed for the erection of dwellings and business houses.

Tyrone, on the Kentucky river, four miles from the county seat, is the next most important town in the county, with a population of about 500, and is noted for being the seat of the Ripy and Dowling distilleries. It has an industrious and intelligent population which is dependent on the distilleries for employment.

Alton, on Crab Orchard and Louisville pike, is a pleasant village of about 250 population. It has no factories or other industries side from the stores and shops usually found in villages of its size.

Camdenville, or Orr, as it is called in the post office directories, is ten miles west of Lawrenceburg, and is a village of 150 population. It is located on Salt river and has a flourishing flouring mill and several general stores.

Anderson county is situated in the Eighth Congressional, Third Appellate, Twelfth Judicial, Twentieth Senatorial and Fifty-seventh Legislative Districts.

BALLARD COUNTY.

(Revised 1907 by Judge J. A. Hines.)

At the sitting of the Legislature in the winter of 1841 and 1842 the County of Ballard was brought into existence by a curtailment of both McCracken and Hickman Counties. Blandville was at that time made the County Seat, since then in the year 1886 Ballard County was divided and Carlisle County was made of the south half of what was originally Ballard County.

The soil of Ballard County is mostly of a black loam with a yellow clay sub-soil except the valleys which are a black sand loam with a blue clay foundation and are very productive. The southern part of the County is hilly with broad valleys between and has been very heavily timbered but most of it has been cut and the land is now tilled. The northern part of the County or about three-fourths of the whole County is comparatively level and is very productive.

Wheat, corn, tobacco, hay and stock of all kinds are extensively raised, but fruit growing, which could be made profitable, receives very little attention. The minerals which exist

in the hills of this County are undeveloped but they abound in a fine quality of potters clay which crops out in many places. About thirty miles of the boundary of Ballard County is on the Mississippi and Ohio rivers and about twenty miles on Mayfield creek which constitutes the navigable waters touching it. The County has no turnpike roads, but has as good graded dirt road maintained by a system of taxation as there is to be found in the State. The Illinois Central and the Mobile and Ohio are the railroads that touch the County. The Illinois Central has one line running through the western part of the County and one running through the central part from Paducah, Ky., to Cairo, Ill.; the Mobile and Ohio has one line running through the western part of the County, and in all Ballard County has about thirty miles of railroad, which in connection with the river frontage makes transportation easy of access, and freight reasonably low. Farm lands will average in price \$35.00 per acre.

While agriculture is the chief industry there is a good opening for the establishment of all kinds of clay industries as well as flouring mills and implement factories; creameries would also do well in several parts of the County. Wickliffe is now the County Seat of Ballard County and is located on the Mississippi river six miles below Cairo, Ill. It has one heading factory, one ice plant and one tobacco house where association tobacco is handled. It has an excellent graded school and good school building, and is at the head of deep water navigation of the Mississippi river.

On the new railroad which was built through the central part of the County a few years ago, are the towns of Barlow, LaCenter and Kevil, all prosperous towns. Barlow and LaCenter have a population of about 600 each, while Kevil is not so large, all three are fine business points and are surrounded by as fine farming lands as can be found in the western part of the State. Barlow and Kevil have a good tobacco house each where association tobacco is handled, have good graded schools, good brick school buildings. LaCenter has a splendid College School Building and a good school is being taught there, also has two tobacco warehouses and two tobacco prizing houses where association tobacco is handled. Blandville has a Baptist College. Bandana is in the north part of the County and has a good graded school.

Ballard County is situated in the First Congressional, first Appellate, first Judicial, Second Senatorial and Second Legislative district.

Post-offices, Bandana, Odgen, Oscar, Ingleside, Kevil, LaCenter, Barlow, Holloway, Wickliffe, Blandville, Slater, Cage and Lovelaceville.

BARREN COUNTY.

(Revised 1907, by J. L. Wright, Glasgow, Ky.)

Barren was taken from a portion of Green and Warren Counties in 1798. It was the thirty-seventh county formed in the State. It is bounded on the south by Monroe and Allen, west by Allen, Warren and Edmonson, east by Metcalfe, and north by Hart counties. The county seat is Glasgow. It is a beautiful town, of about three thousand inhabitants, laid off in a square, with broad streets and a handsome new court house in the center of the square. A splendid well of fine sulphur water was struck a few years ago in the corner of the court yard, and recently the citizens have built one of the handsomest pavilions to be found in any town of its size in the State which is attracting no little attention, and is destined to become a considerable summer resort. Glasgow contains two very commodious and modern arranged school houses, Liberty Female College, with Prof. Robert E. Hatton as principal, late of Roanoke College, Danville, Va., is prepared to take care of at least 150 pupils, each department being well provided with experienced teachers. Also the Public School Building, with E. B. Terry as principal, and during this year a handsome front has been added to the building at a cost of \$15,000 and over 500 pupils are enrolled in the graded school district. Prof. Terry is ably assisted by competent teachers. Glasgow also has two planing mills and one furniture factory, all doing a prosperous business, and a large flouring mill is about completed. The lumber interest here shows a wonderful increase, it being one of the largest lumber points in the State. It has an electric light and ice plant successfully operated.

The price of labor, both farm and factory, has increased in the past two or three years wonderfully, farm labor being very hard to get at any price.

North, northeast and northwest of Glasgow the land is very fertile, the surface is smooth enough to admit of easy cultivation and rolling enough to drain well. The southern portion of the county is not so well favored in fertility of the soil and a smooth even surface as the northern, as it is more broken or uneven, but considerable fine bottom lands can be found on all the water-courses, equal in fertility to any lands in the State. This portion of the County excels in timber, fine running water and in oil productions. Some of the finest oil wells in the State are to be found in this section of Barren county, some of which have been producing oil for thirty-five or forty years without showing any signs of exhaustion. Natural gas has also been found, but no extensive developments have been made in that direction; at the same time it is believed by oil experts to exist here in quantities. The natural products of Barren County may be summed up as follows: Natural products: Oil, gas, pure water, and a reasonable amount of timber—consisting of oak, beech, hickory, gum, etc., the poplar, cherry and walnut having been exhausted.

Agricultural products, tobacco, corn, wheat, oats, hay and sorghum (in commercial value these rank in order named.) In grasses, clover, orchard grass, timothy, red top and bluegrass are the chief sorts grown. In fruits, apples, peaches, pears, plums, cherries, grapes, strawberries and gooseberries, all are grown with more or less success.

Dirt roads form the principal thoroughfares. However, there are two pikes (known as the upper and lower L. & N. pikes), that extend through the county. One of these for its entire length in the county has been macadamized, and the other partially so. Quite an increased interest is being manifested in good roads in this county in recent years, the result of this interest has been that considerable work has been done on the dirt roads leading out from Glasgow, and this interest is growing all over the county, and the general public now realize the benefits to be derived from good roads. All roads in this county are entirely free from toll. The L. & N. railroad runs through the county about ten and one-half miles, the Glasgow branch railroad beginning at Glasgow Junction, a station on the L. & N., terminating at Glasgow, a distance

of ten and one-half miles. The Mammoth Cave railroad runs five miles in Barren county, making in all twenty-six miles of railroad in the county. There are no navigable streams in Barren county, but many of them will furnish an abundance of water power to run any kind of machinery. There is no public effort whatever, made to preserve the timber, and but very little private inclination in that direction, nor is there any public, and but very little private interest manifested in growing new plantations of timber. In fact the timber is being rapidly cut away, and in a few more years, if the destruction keeps up as it is now going on, all the northern portion of the county will be entirely nude of even fire wood.

Among our farmers there is a very perceptible disposition to improve and increase their farm products by the use of improved seed and improved farming implements and by a better and more thorough system of cultivation. There is also a general inclination, on the part of our farmers, to improve the fertility of the soil by a rotation of crops and the judicious use of fertilizers, in a more practical and scientific way, which is undoubtedly leading to better results.

The immigration of this county has increased in the last few years, more coming in than is going out, consequently the population of the county has increased considerably in recent years.

Barren county is in the Twenty-fourth Legislative, Nineteenth Senatorial, Tenth Judicial, Third Congressional, First Railroad Commission, and Third Appellate Court Districts of the State.

The following Post Offices are located in this county, viz: Haywood, Bruce, Lucas, Pageville, Austin, Tracy, Roseville, Peters Creek, Dry Fork, Itoile, Temple Hill, Freedom, Eighty-Eight, Nobob, Oleoak, Slick Rock, Coral Hill, Hiseville, Goodnight, Park, Cave City, Glasgow Junction, Merry Oaks, Railton, Becton, Rocky Hill and Finney. There are ten Rural Routes in the county, five going out from Glasgow, three from Cave City and two from Glasgow Junction.

BATH COUNTY.

(Revised 1907, by W. H. Dougherty, Owingsville.)

Bath county was organized in 1811, out of parts of Bourbon and Montgomery. It is situated in the northeastern part of the State. The county seat is Owingsville, a town of 1,550 inhabitants, forty-six miles east of Lexington. The northern and western portions of the county are undulating and belong to the famous "bluegrass belt." This portion of the county is devoted to raising shorthorn cattle, corn, wheat and tobacco, and contains some of the finest farming land in the State. The southern and eastern portions of the county are somewhat broken and hilly, though all the cereals grow well. In the extreme eastern portion of the county there is to be found some of the finest timber in the State, such as oak, poplar and walnut. The Licking river runs along the eastern and northern boundary of the county, and would be navigable as far as West Liberty, in Morgan county, if locked and dammed. The Licking is a splendid outlet for the shipment of timber, a large amount of which is floated down the river to market by means of "rafts." Timber lands in this county, sell for from ten to thirty dollars per acre. One of the finest iron ore deposits in the United States is found in the eastern portion of the county, about five miles east of Owingsville, the county seat. These mines are at present being operated by the Rose Run Iron Co. There are many other ore deposits in the county that remain undeveloped. Eight miles southeast from the county seat is situated the justly famous Olympian Springs. These springs were, at one time, owned by the great commoner, Henry Clay, and it was here that the late George D. Prentice wrote a greater part of the life of Clay when he was a candidate for the presidency. They are now owned and operated by a corporate company. This year, 1905, the company has erected a magnificent hotel at a cost of twenty-five thousand dollars.

White, black and salt sulphur, chalybeate, Epsom, alum and soda are the waters to be found, all within a radius of one-half mile. These springs, for many years, have been frequented by a large number of guests. On Slate creek, a tributary of Licking

river, two miles south of Owingsville, stands the stack of the first iron furnace built west of the Alleghany mountains. This furnace was built by Jacob Myers, Christopher Greenup and others in the year 1790. The stack is in a fairly good state of preservation. It was at this furnace that the cannon balls were made that Gen. Jackson used at the battle of New Orleans.

Recently this county has become famous for its great production of coal oil. There are now 150 producing wells in the Ragland field.

This county has but one railroad, the C. & O., which runs through the southern and eastern portions of the county. There is also a narrow gauge road running from Salt Lick, on the C. & O., to the timber and coal lands on the Upper Licking river; this is valuable as a feeder to the C. & O. The hope of this county is that the Midland railroad will be extended in the near future from Paris, Ky., on to the coal fields in Morgan county. This county has about 156 miles of turnpike, which is now kept up by means of taxation. There are no toll gates on any of the pikes. The dirt roads are good for the most part and, indeed, all the roads are gradually improving. The average price for farm labor in this county is from \$12 to \$15 per month, including board.

The school facilities in this county are good. Bath Seminary, situated in Owingsville, offers splendid inducements to those wishing to avail themselves of a higher education, having recently voted a sufficient tax to establish a first-class graded school, while at Sharpsburg that town has a normal school that any place might be justly proud of. The public schools in this county, taken as a whole, are as good as the best. Owingsville, the county seat, is one of the prettiest and most cultured and wealthy towns of its size in the State. It has a population of about 1,500 and is blessed with all modern improvements. It has two strong banks, one newspaper, four churches, all good buildings, electric lights, telephone exchange, and is connected with the outside world by telephone. She has a citizenship equal to the very best. The town has long needed a flouring mill, and an industry of this character would doubtless bring large returns. The town is situated on a high hill, and has natural drainage, and splendid water, and is, therefore, one of the most delightful towns in the State in which to reside. Is the birthplace of Richard Menefee and Gen. John B. Hood, of Confederate fame.

Sharpsburg, situated in the northwestern part of the county, is a town of importance; it has three churches, two banks, a large flouring mill, and is surrounded by some of the finest farming lands in the State. Bethel, five miles east of Sharpsburg, is an important village, and is a large shipping point for cattle, hogs and tobacco. Wyoming, Odessa, Reynoldsville, Forge Hill, Olympia and Yale are all thriving villages. Salt Lick, on the C. & O. railroad, in the eastern portion of the county, is the largest shipping point in the county. Many men are now employed in the forest south of Salt Lick, making staves and getting out timber for shipment east. This is a thriving town and a splendid point for enterprising men with capital. The timber lying adjacent to this place is of the best quality and the quantity is almost inexhaustible.

Bath county affords many attractions to those seeking homes or for a place in which to make profitable investments.

Lands are advancing in value; but much of the cheaper kinds well adapted to agricultural, horticultural and fruit culture, can still be purchased at very reasonable prices.

Approximate quantity of tobacco raised this year, 1907, is four million pounds (4,000,000)

Bath county population is remarkable for its intelligence, morality, hospitality, and love of law and order. About two years ago, Local Option was voted by twelve hundred majority, and is not likely to be revoked for many years to come.

Radiating from Owingsville, she has three Rural Free Delivery Routes, and from Sharpsburg, two. Post Offices are: Owingsville, Sharpsburg, Bethel, Sweet, Peebles, Wyoming, Moore's Ferry, Salt Lick, Cave Run, Crooks and Olympia.

The mineral output (iron ore) continues large; and is more likely to increase than diminish, for many years to come.

Bath county is in the Ninth Congressional, Sixth Appellate, Twenty-first Judicial, Thirty-fifth Senatorial, and Ninety-fourth Legislative Districts.

The county and State tax rate is one dollar.

BELL COUNTY.

(Revised 1907, by C. W. Metcalf, Pineville, Ky.)

Bell county is that half million acres of Kentucky that lie against its most southeasterly boundary and was erected in 1867, principally from the counties of Knox and Harlan, but Clay and Whitley also contributed a small portion. It lies against the border lines of Virginia and Tennessee, historic Cumberland Gap, being near the middle of the line, the north half of which separates Kentucky from Virginia, and the south half from Tennessee. Cumberland river takes its rise in Bell county's northern neighbor Harlan and flows entirely through the county, a general course of S. 60 W. cutting through the Pine mountains at Pineville, making the only gap in that high mountain between the "breaks of the Sandy" and Tennessee, this range maintaining for its entire length an average height of almost twenty-five hundred feet above the sea level. On either side of this river are narrow fertile valleys, and in one of these just at the extreme west end of the gap in the Pine mountain made by the Cumberland river, is located Pineville, the county seat of Bell, with a population of about twenty-five hundred persons, within its limits, but surrounded with coal mines and lumber camps employing and making a population of as many more. At Pineville the Cumberland is spanned by four bridges, three passenger and one railroad, and five miles below Pineville another railroad bridge crosses the river. There is also at Pineville a fine public graded school building, a handsome courthouse and many beautiful residences, brick and stone store rooms, two good hotels, two banks, water works and electric lighting plant and a fifteen ton ice plant is now in process of construction. The routes of travel in Bell county, on account of its high mountains are along the streams and many of these routes converge at or near Pineville, which is located at nearly the most central point in the county. Middlesboro, deservedly known as the "Magic City," is located in this county, on Yellow creek, near Cumberland Gap, and is a thriving city of some five thousand inhabitants, and is the office home of some twenty coal companies, operating in its

neighborhood, on the Kentucky and Tennessee border, with a daily output of from three to five thousand tons. It has all the modern equipments of a young city, elegant business houses, beautiful residences, concrete sidewalks, good streets, water works, hotels, brewery and ice plant, two banks, and its magnificent scenery is bringing it notice as a desirable summer resort. It is also the home of the official force of the Cumberland Valley division of the Louisville & Nashville railroad and the terminus of the Southern railroad.

The percentage of tillable land in the county being so small, its agricultural productions are much less than the demand. Its surface is composed largely of steep high mountains covered with large timber and dense undergrowth, making it expensive to prepare for farming, the result hardly justifying, although the mountains are rich in decomposed vegetable matter, which lies loosely on the ground, but in a short time the washing of rains takes away the soil. Oats, millet and corn are raised and grow well. Orchard grass does well, and in some localities timothy and clover. Vegetables, and especially cabbage, potatoes, beans and tomatoes grow well and yield large returns. Grapes, strawberries, apples, peaches and pears produce abundantly, and seem to be free from frost. Experiments demonstrate that the soil is adapted to the raising of light tobacco of fine flavor and texture.

Bell county is peculiarly rich in its coals; it now being third in the State in production, both as to quantity and quality, many of its mountains showing an aggregate of thirty to forty feet of workable veins of bituminous coal for steam, domestic and coking purposes varying in thickness from three to seven feet. There are some twenty-five companies operating these coal lands at this time, and new locations are being constantly made, and new railroads built from the Louisville & Nashville main line to these operations. All of the coals in this county about which anything is definitely known are above drainage, and are mined by drifting. There are known veins below drainage, which will have to be mined by shafting, but no explorations have as yet been made in this direction. For the purpose of handling the coal output the Louisville & Nashville railroad and the Southern railroad are used, the former having about fifty miles of road in the county, and the latter a traffic arrangement with the Louisville & Nashville over about twenty-five miles of road in the Middlesboro field. Nearly all

of the coal from the Middlesboro field goes into the Southern States, and that from the Pineville field goes into the States of Kentucky, Indiana, Illinois and Ohio.

A portion of the county lies alongside of the Knox county oil field, but no drilling has ever been done in Bell county, although indications are good for oil and gas and a large portion of the county has been under lease. A stratum of sand rock, very soft, is found along the Pine and Cumberland mountains, suitable for the manufacture of ordinary glass, with large coal veins, for the generation of gas within a stone's throw.

The entire county with the exception of two magisterial districts is under local option.

The population of the county is thrifty, energetic and hospitable, and is composed of a blending of the original native with the influx of persons from many States in the Union, attracted by the superlative character of the minerals to be found here.

The bonded indebtedness of Bell county is \$38,000; in 1894 this debt was \$60,000. The rate of taxation for county purposes is sixty cents per one hundred dollars.

This County is situated in the Eleventh Congressional, Seventh Senatorial, Seventh Appellate and Twenty-sixth Judicial Districts.

BOONE COUNTY.

(Revised 1907, by M. C. Norman.)

Boone county, the thirtieth in the order of formation, was organized in 1798, out of a part of Campbell, and was named in honor of Daniel Boone, the most prominent of the early settlers and a leader in the terrible struggle for possession which gave to the State the name of "The Dark and Bloody Ground."

The fertility of the soil in a large portion of the county is hardly surpassed by any land in the State. Some portions are hilly, but produce a fine quality of tobacco, while the thin portions are well adapted to timothy hay. With forty miles of Ohio river bottoms, we have an inexhaustible corn growing district.

This county is almost exclusively devoted to agriculture; a few flour mills, saw and planing mills, one large distillery and two tomato canneries are about all we can boast of outside of this line.

Our people are industrious, home-loving, and conservative in all things.

Boone county is making progress in the matter of good roads. Under the present system, from ten to twelve miles of substantial macadam can be built yearly, and soon most of the important roads in the county will be turnpikes, and the tax-payers will hardly feel the pressure.

Years ago we had in this county, the corn, wheat, hogs and cattle era, but with western competition this ceased to be profitable. Then came the tobacco era. This stripped our farms of timber and greatly impoverished the soil, and yet tobacco is an important product, and under the auspices of "The Society of Equity" better prices will be obtained, and while fewer acres will be cultivated, greater profits will be realized, and the fertility of the soil restored. But now the era of dairying is dawning and many of our farmers are beginning to realize the importance of this great industry. One fine and up to date creamery has been built, and is in successful operation with most flattering prospects. Another is being built with an equally favorable future. The product of these creameries classed as "Elgin Creamery" and brings the same price on the open market.

The labor question is a serious one at present. Farm hands are scarce, but certainly energetic young men and men of families with small capital, can find employment at remunerative wages as farm hands or tenants on the share system. Many of our most prominent farmers have begun life in this way.

Our farmers believe in making every dollar they can, and at the same time increase the fertility of their farms. With the best breeds of stock, the best varieties of field and garden seeds, and with improved farm machinery for proper cultivation, farming is a success in Boone. Alfalfa for hay is attracting attention here, and many of our farmers will give it a trial.

We have railroads, turnpikes, telephones in almost every house, churches, schools, a number of deposit banks and almost everything that belongs to civilization.

The financial condition of the county is all that could be desired; not an outstanding bond, not a dollar of indebtedness, and a sufficient amount in the treasury to meet emergencies. The fiscal court is composed of men who guard the interests of the county, as they would their own. With taxable property amounting to \$6,527,344.00 our county levy is ten cents on the hundred dollars for roads, and two and one-half cents for general expenses, a total of twelve and one-half cents on the hundred dollars, with a poll tax of \$1.50, which is ample for all purposes.

Our poor are well cared for in a commodious infirmary. We have a fine court house and other necessary county buildings in Burlington, the county seat, which town is the home of the Boone County Recorder, the best county paper in the State. It is edited by W. L. Riddell, one of Boone's "native sons." All of our public works are substantial and paid for when completed.

The North Kentucky Agricultural Association is located at Florence, in this county, near the Cincinnati Southern railway. Its grounds are beautiful and the buildings up to the average. By prudent management and liberal premiums it has attracted the attention of stock men from various parts of this State and Ohio and Indiana. It will eventually become one of the finest in the State.

Boone county is in the Seventy-eighth Legislative, Twenty-third Senatorial, Fifteenth Judicial, Sixth Congressional, Third Railroad Commission and Sixth Appellate Districts of the State.

BOURBON COUNTY.

Formed in 1775 from Fayette county and named in honor of the famous Bourbon family of France. Bourbon county was one of the nine counties organized by the Virginia Legislature before Kentucky became a State. It is bounded on the north by Harrison, the east by Montgomery, the south by Fayette, and west by Scott, and is watered by Stoner, Hinkston, Houston and Boone creeks and the south fork of the Licking river. The county has a population of 16,976. Located in the heart of the bluegrass region, the gently undulating soil is wonderfully fertile, producing generous yields of wheat, corn, barley, oats, hemp, tobacco, etc.

The virgin half of the soil produces about 150,000 bushels of bluegrass seed per year, which sells at twenty-five cents per bushel from the stripper and furnishes grazing for sheep, giving an annual wool clip worth \$15,000, for valuable horses, mule and hog stock, and for \$300,000 worth of fine export beef cattle every year which grow to an average weight of 1,450 pounds. Scores of the best race horses the turf has ever known were bred in Bourbon county.

The soil furnishes an abundance of primitive limestone, not susceptible to polish, for building purposes. In the county are two undeveloped lead mines—one in Paris and the other near Millersburg. Near North Middletown is an oil well bored during the Civil War. Oak, ash, hickory, elm, sugar-tree, wild cherry, mulberry and box elder constitute liberal timber resources. The walnut timber is rapidly being cut away. Though the soil is finely adapted for dairying, truck farming and fruit growing, it is not extensively carried on. The fruit crop averages probably \$6,000 per year. None of the streams are navigable.

There are two hundred and sixty-six miles of excellent turnpikes and thirty-nine miles of dirt roads in the county—every mile being free. The roads were acquired by the fiscal court by purchase, gift and condemnation. The aggregate cost of the pikes was \$55,000. The pikes were freed without a lawless or violent act. The rate of the taxation for the purchase and maintenance of turnpikes is twenty-five cents on the one hundred dollars. The thirty-eight miles of the Louisville and Nashville railroad, comprising branches in four directions—to Lexington, Covington, Winchester and Maysville—and the Frankfort and Cincinnati (Kentucky Midland), eleven miles, going to Georgetown and Frankfort, afford railroad competition and give Bourbon excellent shipping facilities. It has been proposed to extend the Frankfort and Cincinnati road to the mountains of Eastern Kentucky.

In Bourbon are several salt and sulphur springs, but none have sufficient merit to justify being made health resorts. There are no waterfalls or rapid streams in the county, though the waters of Stoner and Hinkston are utilized in operating the machinery of several flouring mills. Bourbon has no natural curiosities save a few Indian mounds, and a buffalo trace on Cane Ridge, but in her soil reposes the remains of Edward Boone, the pioneer and Indian fighter, and brother of Daniel Boone. Bones of mastodon have been found in excavations near Paris.

The average price of farm land in Bourbon county is sixty dollars per acre. The farm hands employed are mostly colored, the wages being fifteen to eighteen dollars per month. There are no foreign colonies in the county. Bourbon has no fruit or vegetable canneries or cheese factories. There is an excellent opening for tobacco, hemp, broom-corn manufacturing interests and fruit canning enterprises. The county furnishes an abundant supply of these products.

The county seat of Bourbon is Paris, a beautiful and enterprising city of about 7,500 inhabitants. The city is located on high ground, and Stoner and Houston creeks, which flow through the corporate limits, offer fine advantages and locations for factories. The city is healthy and is a delightful place of residence, having electric lights, water works, electric fire alarm system, competitive telegraph and telephone communication, ice factory, handsome business blocks and residences, well appointed stores, fine theater and school buildings, and nine churches. The people are progressive, intelligent, robust and hospitable.

The Millersburg Female College, a flourishing institution, has recently been improved and refurnished. The public schools are in admirable condition. The public fund is supplemented by local taxation in but three of the county districts. The county has no bonded debt. The rate of taxation is eighty-seven cents on the one hundred dollars, fifty-seven and one-half for revenue, nine and one-half for general purposes, and twenty-five cents for turnpikes.

Bourbon county is in the Seventh Congressional, Fifth Appellate, Fourteenth Judicial, Twenty-eighth Senatorial and Seventy-fifth Legislative Districts.

BOYD COUNTY.

(Revised 1907 by D. W. Steele.)

Boyd county was created by an act of the Kentucky Legislature in January 1860. Named from J. Lynn Boyd; taken from the counties of Carter, Greenup and Lawrence, and comprising 266 square miles. Bounded on the east by the Big Sandy river, on the south

by Lawrence county, on the west by Carter and Greenup county lines, and on the north by the low water mark on the north side of the Ohio river.

The first election of officers was held on May 20, 1860, resulting in the election of J. D. Ross, County Judge; James W. Riley, County Court Clerk; J. D. Jones, County Attorney and William Williams Sheriff.

At that time there were four charcoal furnaces in the county with a daily capacity of thirty-six tons of pig iron, running eight months in the year.

The hill lands and a great deal of the bottom land were covered with very fine timber, such as poplar, oak, beech, hickory, walnut and pine; a great deal of which was used for making charcoal. The soil along the Ohio and Big Sandy rivers and the East Fork of Little Sandy is rich and fertile. The principal crops raised are wheat, corn, oats, hay and all the vegetables adapted to the climate. The hill lands raise very fine fruit and is well adapted for grazing stock when set in grass. A great many cattle are grazed and shipped to the Eastern markets.

Catlettsburg, at the mouth of the Big Sandy river is the county seat. At the time the county was organized it had a population of about 800 now it has a population of 5,000 of industrious, energetic people, with one flouring mill, one ice plant, one pottery, two national banks, a site purchased for a Government Building for holding a Federal Court and other offices, five churches and a good public school. It is lighted by electricity and heated by natural gas, has paved streets with railroads passing through east, west and south, and is connected with Ashland, Kenova, Ceredo, and Huntington, W. Va., by the Camden Interstate Electric Line.

Ashland, five miles below Catlettsburg, was laid out in 1854. It is a manufacturing city and has a population of 12,000, with paved streets, electric lights, heated by natural gas; with eight Protestant churches, one fine Catholic church, and two Colored churches, with five fine public school buildings and a public school system not surpassed by any city of its size in the State, also a school under the auspices of the Catholic church, where all branches from the primary to a business course is successfully taught. The city is above high water mark.

Its manufacturies consists of three blast furnaces with a daily capacity of 500 tons of pig iron, two fire brick yards with a daily

capacity of 40,000 bricks, two foundries and machine shops, one steel plant where 450 tons of pig iron is manufactured into steel daily, one rod mill, where 100 tons of nail and other rods are made daily, one rolling mill and nail factory, one sheet mill, one large tannery, two flouring mills, two ice plants, three saw mills, two planing mills, four banks with an aggregate capital stock of \$480,000.00.

Ashland is the terminal of the Ashland Coal & Iron Railway Company, Elizabethtown, Lexington & Big Sandy Railway and the Ohio & Big Sandy Railway, and the C. & O. passes through east and west. The Camden Interstate Electric Line connects the city with Ironton, O., Huntington, W. Va., and Catlettsburg.

Boyd county has a total population of 22,000 and her assessed value of property for taxes is something over \$7,000,000.

The report of the Geological Survey of 1854 to 1857 showed no deposit of coal. But in 1864 the Ashland Coal & Iron Railway Co. was organized and prospected for coal on Williams creek, a tributary of the East Fork of Little Sandy river, and found a four foot vein of coal, from which they have mined, consumed and shipped millions of tons of the finest of coal for fuel, steam and smelting purposes. The county's timber resources have been greatly depleted during the past ten years by the great demand for all kinds of lumber.

The county in 1861 had a voting population of 800; and from April 1861 to April 1864 furnished 1,100 men for the Federal Army and Navy of the United States.

The county is well provided with public highways, kept up by the county taxes, which roads and highways are all free for travel.

Boyd county is in the Ninth Congressional, Seventh Appellate, Twentieth Judicial, Thirty-second Senatorial and Ninety-eighth Legislative Districts.

Postoffices:—Alley, Arigo, Ashland, Boltsfork, Cannonsburg, Catlettsburg, Coalton, Culbertson, Durbin, Garner, Herd, Lockwood, McNeal, Mavity, Mayhew, Naples, Normal, Potomac, Princess, Rush.

BOYLE COUNTY.

Boyle county, the ninety-fourth in order of organization, was formed in 1842 out of parts of Mercer, Lincoln and Casey counties. It is bounded on the north by Mercer county, on the east by Garrard, on the south by Casey and Lincoln counties and on the west by Washington and Marion counties and is near, if not the geographical center of the State; and while it is one of the smallest counties in area (having only a little over a 100,000 acres of land), its assessed valuation of property listed for taxable purposes is more than seven millions of dollars. Situated on an average elevation of one thousand feet above the sea level its soil is rich and deep and easily cultivated, adapted to wheat, corn, tobacco, hemp, oats, millet, timothy, clover, orchard grass, bluegrass, and any and all other crops and grasses usually grown on bluegrass soil, all of which grow to a perfection and yield unsurpassed.

The farmers of the county use the latest and most improved implements for the successful cultivation and improvement of their farms, and bring to their aid all the advantages of a liberal education of which the larger majority are the fortunate possessors.

There is but little timber in the county, comparatively speaking, except the poplar, ash, walnut cherry and locust, scattered throughout the woodland pastures of the farms.

White and gray limestone furnish an abundance for building and road purposes. In the southern part of the county, near Junction City, are Linnietta Springs, a health resort, where hundreds of people from many other States and counties annually visit to drink of the many varieties of mineral waters to be had there.

There are two lines of railroads, the Knoxville branch of the Louisville & Nashville running through the county from west to east, and the Cincinnati, New Orleans & Texas Pacific from north to south, crossing the L. & N. R. R. at Junction City, in the southern part of the county.

The county owns all her turnpikes and macadamized roads of about one hundred miles and maintains them free of cost to the traveling public. The county or dirt roads are maintained under the old military or warning in system, except persons as well as teams or paid for their labor and not compelled to work more than six days in any one year. The turnpikes and macadamized roads are divided

into sections of five miles and let out annually by contract at so much per rod for stone and gravel and so much per mile for ditching and keeping in repair the bridges, culverts, etc. Under this system the roads are improving very fast, and in a few years almost every mile of road in the county will be macadamized.

The county has a large negro population, from which a large proportion of the farm laborers are obtained. The average wage per month with board is about fifteen dollars, and without board, about twenty dollars.

The educational facilities of the county are all that could be desired, there being more than fifty public schools, acadmies and colleges distributed all over the county.

Danville,, the county seat, is a city of about six thousand inhabitants, and the center of much wealth and intelligence, being one of the oldest towns in the State, being laid out in 1782 by Walker Daniel and incorporated by the Virginia Legislature in 1787. Here, in 1823, the Kentucky Institution for Deaf Mutes was established, the fourth in order of time in the United States, and at present, with its splendid equipments, educates and learns trades to nearly five hundred of these unfortunate children, both white and colored, from all portions of the State. Here is also located famous old Centre College, Caldwell Female Institute, Hogsett Military Academy, the City High School and many other public and private institutions of learning both for white and colored. Here are to be found churches of all denominations, three national banks, gas and water works, the latter owned by the city, the Advocate Printing and Publishing Co., owners and publishers of the Kentucky Advocate, a tri-weekly paper of large circulation, a large ice factory, flour mills, and many other manufacturing establishments, together with handsome business houses and residences and a live and energetic set of merchants and business men generally.

Unfortunately Danville has but one line of railroad at present, but with a fair prospect of another and competing line in the near future.

Perryville, situated in the western part of the county, is a town of several hundred inhabitants, among them some of the most substantial citizens of the county. One banking institution, several mercantile establishments, churches, flour mills, and various institutions of learning go to make up the business little city. In and around the town was fought the battle between the armies of Generals Bragg and Buell in October, 1862.

Junction City, situated in the southern part of the county, at the crossing of the L. & N. and C. S. railroads, is an incorporated town of one mile square, with a population of about one thousand, five churches, several manufacturing establishments, public high grade school and the best transportation facilities in the county, together with wide awake, intelligent business men. The town is fast growing into a city, and is perhaps unsurpassed as a point for any kind of manufacturing establishment.

Boyle county is situated in the Eighth Congressional, Fifth Appellate, Thirteenth Judicial, Eighteenth Senatorial, and Sixty-fifth Legislative Districts.

BRACKEN COUNTY.

(Revised 1907, by H. T. Bradford, Brooksville, Ky.)

Bracken county was formed in 1796 from Campbell and Mason counties, and named in honor of William Bracken, a pioneer, and was the twenty-third county created in the State.

It is bounded on the north for twenty miles by the Ohio river, east by Mason county, south by Robertson and Harrison, and west by Perdleton county, and reaches from the Ohio to the Licking river. The north fork of the Licking river, Bracken, Locust, Kin-kaid and Willow creeks are the water courses which furnish abundant supply of water and quite a good amount of bottom land.

The lands are, however, mostly high and rolling so that the hills are beautiful, and fertile, without the least bit of waste land. Limestone is abundant; and for bluegrass, clover timothy, wheat, corn, and tobacco crops this county is well adapted. No other county in the "White Burley" district produces quite the equal of Bracken in texture, fiber, color, and other excellent qualities of tobacco. Bracken county annually produces about 4,000,000 pounds of White Burly tobacco, this being its chief agricultural crop. All varieties of fruit common to this latitude are abundant.

Fine well-bred horses are plentiful; while the excellent pastures are covered with good cattle and hogs in many places. Timber land is not to say abundant, and yet there is quite an amount of oak forest scattered among the hills.

If the soil be exhausted, it is easily reclaimed by grassing without artificial fertilizers. Farming methods are improving, and our farmers are well-to-do, contented, and prosperous.

There are 200 miles of turnpike free to the public travel. These roads are limestone and in fairly good condition, kept up by taxation and under the management of one Supervisor.

The C. & O. railroad runs for twenty miles along the Ohio valley, and from it there extends about ten miles of railroad from Wellsburg to Brooksville, the center of the county. This ten miles of railroad was built by citizens of Bracken.

Farm laborers are very scarce and receive from \$16 to \$20 per month.

There are seven banks all in excellent condition, whose stock ranges in prices from \$120 to \$175. Brooksville, the county seat, is a town of 800 people, well located, with splendid business houses of all kinds, three Protestant churches and one Catholic church, good graded school, good roads and farms around it.

Augusta is the Metropolis, a city of 2,000 people, a shoe factory, a laundry, two factories for upholstery goods, which employ about 200 hands daily, beautiful churches of all kinds, as good graded school as there is in the Ohio valley, elegant school building and grounds valued at \$25,000, all kinds of stores and business houses, and besides these it is filled with splendid residences, and for pretty homes is unsurpassed. These are towns suitable for any sort of factories to operate profitably, both on account of location and shipping facilities. Tax rates are medium, electric light plants excellent, and health environments good.

Foster, Johnsville, Milford, Berlin, Powersville, and Germantown are nice towns, all of which handle large quantities of tobacco.

The county is noted for its White Burley tobacco and its good citizenship and high tone of morals. There are fifty-one good school houses; and churches are located here and there on good roads; and taking all in all no better county for homes at reasonable prices can be found. Lands range in price from \$10 to \$125 per acre, averaging about \$35. Bracken lies in the Ninth Congressional, Sixth Appellate, Nineteenth Judicial, Twenty-sixth Senatorial, and Eighty-fifth Legislative Districts. There are ten Rural Free Delivery Routes. Post Offices are Augusta, Brooksville, Elm Grove, Bradford, Foster, Johnsville, Berlin, Petra, Powersville, Milford, Parina, Chatham, Germantown. Flouring mills are at

Milford, Brooksville, Cumminsville, Augusta. Two mammoth storage tobacco warehouses are building, one at Brooksville, one at Augusta, under the management of the "A. S. of E." The population is about 12,400. There are three news papers, all doing well. In October 1906, the county voted "Dry" by 561 majority.

BREATHITT COUNTY

(Revised 1907 by S. S. Faulbee.)

Breathitt county lies on the North and Middle Forks of the Kentucky river, both streams flowing entirely across the county. It was formed from parts of Estill, Clay and Perry counties in 1839, and is bounded on the north by Magoffin and Morgan, on the east by Knott, on the south by Perry and on the west by Owsley and Lee counties.

The soil is very productive, especially in the valleys. Its surface is mountainous and its wealth consists principally in the mineral beneath the surface and its magnificent forests of hardwood timber growing thereon. Its supply of coal is inexhaustible, the principal fields of cannel coal being the George's Branch,, Wilson Wedge, Flint Ridge, and Buckhorn. It also abounds in bituminous coal. The George's Branch cannel coal field is on the North Fork of the Kentucky river, ten miles above Jackson. It ranges in thickness from 34 to 46 inches; the cannel block ranging from 16 to 24 inches, the rest of the vein being bituminous. The cannel block is a very superior quality of gas coal. It produces 13,500 cubic feet of gas per ton. The Buckhorn coal field is the same quality, the vein ranging from 20 to 36 inches thick with the same thickness of bituminous coal on top. This field is regarded as the largest cannel coal field ever discovered. The Flint Ridge contains a number of veins of different kinds of coal, the aggregate thickness of all being 52 feet and one of the cannel coal veins is 7 feet thick. The Buckhorn and Flint Ridge fields are each located twenty miles from Jackson which is the nearest railroad point. Engineers are now in the field locating a railroad from Jackson through these coal fields. The route prospected is an easy one, extending up the river and through the creek valleys, and the road can be built at comparatively small cost.

There are a great many large veins of bituminous coal of the finest quality in the county; one of the principal ones being an eleven foot vein on Howard's Fork of South Quicksand Creek, ten miles from Jackson. Five feet of this vein is a very fine quality of coke, the other 6 feet being the best quality of bituminous coal.

Jackson, the county seat of Breathitt county, is situated on the North Fork of the Kentucky river, a distance of 94 miles from Lexington. It is the terminus of the Lexington & Eastern and of the Ohio and Kentucky railroads, and of the Kentucky Lumber and Veneering Company's narrow gauge road which runs from Jackson to Robins, a lumbering camp 7 miles from Jackson. It is the most progressive city in the Kentucky mountains. It has a population of 2,000, four churches, electric lights, two schools, three saw mills and one stave mill. It has four jobbing houses, each of which carries a general line of merchandise, and a great number of smaller stores. The Jackson Coal Company operates a mine just outside of the corporate limits which is the only mine extensively worked in the county. This company owns a large body of coal lands of the finest quality and its supply is inexhaustible. It has the latest improved plant with steam compressor, exhaust fan and all the appliances used in the modern and up-to-date mines, and works about 150 hands with an output of ten cars per day.

Breathitt county is covered with the finest oak, poplar, ash, cucumber, sugar tree, beech, birch, and hickory timber. The poplar is being very rapidly worked out, but the rest of the timber is comparatively untouched, and almost inexhaustible in quantity, and can be bought for from \$4.00 to \$20.00 per acre.

There are a number of saw mills in operation on the various streams in Breathitt county in addition to the larger mills located at Jackson. The two principal mills are the Swan Day Lumber Co., mill at Jackson, and the Kentucky Saw Mill Company's plant which is located on the Ohio & Kentucky R. R., about a mile below Jackson; the former being a band saw with an output of 50,000 feet of lumber per day.

There are 94 public schools taught in the county. The S. P. Lee's Collegiate Institute, located at Jackson, is a splendid educational institute, with manual training, domestic science, and musical departments. It has about 400 matriculates.

The soil in Breathitt county produces fine vegetables, corn, oats, rye, wheat and tobacco, also the finest apples are grown here.

Corn and oats are the principal crops now raised, and are usually sold for fifty cents per bushel.

There are two mineral springs on Cane creek, about four miles west of Jackson, whose waters possess wonderful healing qualities. These springs have been discovered for many years and used by the neighbors for medicinal purposes. They have not been developed as health resorts, but the splendid medical qualities of the waters and the present progress of the county makes it a question of a short time until they will be used as places of health resort.

The soil in this county is well adapted to grass, especially timothy, clover, red top, orchard and English bluegrass. With this quality of soil and the vast boundaries of land unoccupied, which can be bought at a small cost, a splendid opportunity for sheep culture is offered. Sheep will do well in the woods most of the year and are always healthy.

The Lexington & Eastern R. R. Co., which is now operating a railroad from Lexington to Jackson, has amended its charter extending the road from Jackson to Hazard, the county seat of Perry county, 35 miles distant, and is now making arrangements to begin the construction of said extension and push it rapidly to completion. The road goes through one of the wealthiest and best coal fields in Kentucky.

Breathitt county is adapted to fruit raising and in many localities the peach trees bear annually. This is supposed to be due to the fact that the trees are located above the frost line. Apples, pears, peaches and grapes grow in abundance here.

Breathitt county is situated in the Tenth Congressional, Seventh Appellate, Twenty-third Judicial, Thirty-fourth Senatorial and Ninety-second Legislative Districts.

BRECKINRIDGE COUNTY.

(Revised in 1907 by Henry DeHaven Moorman.)

Breckinridge county was formed out of a part of Hardin county in 1799 and was named in honor of the distinguished lawyer and statesman, John Breckinridge. It lies in the northwestern part of the State on the Ohio river. The first settlement of the county was at Hardins-

burg prior to 1782, at which time the town was laid out into lots and was afterward incorporated in 1800. Many bloody fights occurred between the early settlers under Captain William Hardin (Indian Bill) and the Indians from north of the Ohio. Possibly his bloodiest engagement was near Saline creek in Illinois, where he and eighty men had a desperate encounter, in which Capt. Hardin was seriously wounded, but sat upon a log and commanded and encouraged his men.

Breckinridge county now has a population of about 23,000. It has an area of 595 square miles, being the sixth county of Kentucky in size. It has seventy miles of railroad within its borders. A fresh spirit of progress and enterprise seems to have asserted itself in the last year and the development of the county has advertised its natural advantages and has attracted quite a good deal of foreign capital.

Products, soil: The soil of the county is generally very fertile and grows magnificent crops. Much of it is limestone, and blue grass grows voluntarily in many localities. Tobacco, wheat, corn, hay, peas and apples are the principal products. The county is in the Green River tobacco district and produces a special type of red tobacco that is the finest in the world. It is one of the first tobacco counties of the state. This county was originally very heavily timbered. Now there are considerable quantities of merchantable timber—oak, poplar, hickory, walnut, chestnut, ash, beech, elm, etc. The average selling price of land is between ten and fifteen dollars per acre. Land is assessed low and is very cheap when compared with the land of same quality in other localities.

Live Stock: The soil, unusually good water supply and the price of land combine to make Breckinridge county one of the best stock-raising localities in the world. It has reasonably cheap land, watered by excellent creeks and springs and fertile enough to produce the various species of grass so well adapted to the locality. This county's lands are attracting the attention of non-residents and purchases made by them have caused our lands to enhance in value. Glendeane, Irvington and Hardinsburg are the livestock centers. The Planters Hall Stock Farm, at Glendeane has on it some of the finest Polled Durham cattle in the world. Hardinsburg is the location of the Breckinridge Fair Association and is a large market for mules and horses. Livestock interests were very much stimulated by the organization of the fair and the general improvement in stock is very marked.

Education: Breckinridge county's educational facilities are splendid. At Hardinsburg, Cloverport, Glendeane, Kingswood, Irvington and

many other places there are fine schools. Joel H. Pile, Superintendent of Schools, has by unceasing and faithful labors aroused unusual interest in higher education and has successfully impressed the importance of compulsory attendance. The schools of the various districts are among the best and are, as a rule, in the hands of wide awake, competent teachers who urge co-operation on the part of the patrons. The Superintendent procures the very ablest instructors and endeavors to have a lecture each night during the institutes by the very best available talent on some important or instructive subject. The county officials make an effort to accord the teachers an annual welcome and the citizens extend a helping hand. The effect is good.

Agriculture: Breckenridge county has a very large per cent of successful farmers, most of whom take some of the leading Agricultural Journals and are availing themselves of the advantages pointed out therein. There are many familiar with scientific agricultural principles and in many homes may be found the leading Live Stock Journals of our country. Our farmers carry insurance, are becoming prudent buyers and careful sellers and have always been good producers. The farmers use the latest machinery, the best field seeds, and know that it is as cheap to raise a good animal as a common one. Their homes are most comfortable, being surrounded by orchards that contain most every species of fruit. Our people are delightfully hospitable. Rural free deliveries now reach most every neighborhood. Our county produces annually about 5,000,000 pounds of tobacco. The farmers, as a rule, especially in the tobacco producing sections of the county, belong to the American Society of Equity and their tobacco is pooled each year. However, reason has prevailed over passion and prejudice and no violence has ever been resorted to by any grower. There is never a complete crop failure here on account of the adaptability of the soil to so great a variety of products. Our farmers are prosperous and business conditions generally good.

Industrial: The labor question is one of absorbing interest here. Labor is hard to obtain, regardless of price. These conditions have developed in the last few years. The farm production would be much heavier with these conditions improved. The Louisville, Henderson & St. Louis Ry. operates seventy miles of its road through Breckenridge and has done much to develop it. When the Madisonville, Hartford and Eastern Ry. is finished, it will convert the spur from Irvington to Fordsville into a main line thus providing a great additional advan-

tage. This road has its shops at Cloverport and employs a large number of men in the county. Cloverport has also three vitrified brick plants, a large flouring mill, a saw mill, a newspaper, a tile factory, ice factory, a foundry, two banks, and other prosperous industries, Hardinsburg has a concrete grain elevator, large flouring mill, saw and planing mill, two banks, canning factory, a bakery, several large distributing establishments, and the Breckinridge Democrat, official organ of the county.

Financial: Breckinridge county has nine banks with nearly \$1,000,000 on deposit therein. The State and county taxes together amount to ninety-three cents on the \$100 taxable property. The assessed valuation is between four and five millions. Mineral resources undeveloped. Splendid locality for various kinds of investments, lands, minerals, gas and oil especially.

County Seat: No old town in Kentucky has made more progress than Hardinsburg in the last year. While it has always been the largest tobacco market between Owensboro and Louisville and is supported by a strong agricultural community; it has just awakened to the necessity of public improvement. Great improvement is being made in county roads and a vote will probably be taken next year on the issuing of bonds for turnpikes, all of which will be very beneficial to the town. The county seat, together with almost the entire county, is local option. Hardinsburg is a good school town and its people are characterized as genuinely hospitable.

Minerals, etc: Asphalt, limestone, sandstone, and natural gas are found in abundance in certain localities. There is a large crusher at Webster and its output of crushed limestone is shipped to many foreign points. Natural gas is used for heating and lighting purposes at Cloverport. The celebrated White Sulphur and Tar Springs, near Cloverport, are famous the world over and, for medicinal purposes, the water is unequalled. There are many other mineral springs.

Towns: Cloverport, Hardinsburg, Stephensport, Irvington, Webster, Harned, Garfield, Kingswood (location of Kingswood College), Glendean, Rockvale, Mattingly, Union Star, Custer, Mooleyville, Big Spring, Bewleyville, Kirk, Hudsonville, McDaniels, Addison, McQuady are some of the important towns.

Districts: Breckinridge county is in the Fourth Congressional, Second Appellate, Ninth Judicial, Tenth Senatorial, and Twenty-eighth Legislative Districts.

BULLITT COUNTY.

(Revised 1905 by John L. Sneed.)

Bullitt county, named in honor of Capt. Thomas Bullitt, who, in company with a brave band of hardy Virginians, did considerable surveying in the vicinity of Shepherdsville and Bullitt's Lick, in 1773, was carved out of Jefferson and Nelson counties in 1796, and was the twenty-second county to be formed after Kentucky became an organized State.

During its early settlement several bloody fights between the pioneers and Indians occurred in what is now Bullitt county. About the last fight on Kentucky soil with the Indians, took place at Bullitt's Lick, where Gen. Grist, a native of the county, and other settlers drove off a large party of invading savages, and pursued them to the banks of the Ohio river, near the mouth of Salt river, where they succeeded in escaping across to Indiana in canoes which they had concealed on the banks of the river.

Bullitt county is traversed from east to west by Salt river, which is navigable for a distance of twelve miles. Salt river has two tributaries of importance, the Rolling Fork, which flows into the river from the southeast, and Floyds Fork, which flows from the Beargrass country on the north. Rolling Fork, part of the year, is navigable for a distance of ten miles, for small boats.

Salt river. Rolling Fork and Floyds Fork are moderately well stocked with fish, and Salt river affords fairly good fishing in April and September.

Bullitt is bounded on the north by Jefferson, on the east by Spencer, on the south by Nelson and on the west by Hardin. The western part of the county is hilly and broken in places. Middle Bullitt is rolling generally, and all of it produces well when carefully cultivated. The soil of Bullitt will produce any crop grown in the State, with the possible exception of hemp.

Wheat, corn, oats, rye, barley, all kinds of grasses and vegetables are grown in this county, especially wheat and corn. The Salt river valley, Cox's creek bottoms, Rolling Fork bottoms, and Floyd's Fork bottoms are equal to any land in the State in the production

of corn, and where the uplands have been taken care of and manured and clovered, twenty-seven bushels of wheat have been averaged on large fields per acre.

Recently the production of tobacco has increased very materially. Probably seven hundred hogsheads of burley will be raised in the county this year. Alfalfa raising is also receiving considerable attention from the farmers of the county and is growing in favor.

Timber is growing scarcer every year, owing to the continuous running of saw mills. Good timber lands sell for fifty and seventy-five dollars per acre. It is usually sawed and shipped to the market in commercial dimensions. Hickory, ash, oak, pine, locust, linn, poplar, cedar, cherry, and in fact all kinds of timber, indigenous to Kentucky, grow in Bullitt.

Bullitt county contains many mineral wells, whose waters abound in medicinal virtues. Chief among these is the well at Paroquet Springs, famous in ante-bellum days as the foremost summer resort in the south.

The first salt ever manufactured west of the Allegheny mountains was made from the salt wells at Bullitt's Lick, three miles west of Shepherdsville, and the pioneer settlers came many miles to get it.

The town of Shepherdsville lies on the north bank of Salt river where the main stem of the Louisville and Nashville R. R. crosses that stream, and lies about eighteen miles south of Louisville. It is the oldest incorporated town in Kentucky, with the single exception of Harrodsburg, and has a population of about five hundred. It enjoys the distinction of having the largest and best stores to be found in the State, outside of the large cities, and in past few years many handsome residences have been erected. By reason of its superior railroad facilities, Shepherdsville would be an excellent point for factories of any kind, there being an abundance of water to run them, and building sites could be secured at low rates. It is now believed that an electric railroad line from Louisville will be extended to this place very shortly. It is badly needed and would pay well.

A canning factory would certainly pay at this place. All kinds of fruits and vegetables are raised, and the canner could market his goods at a nominal cost. Two creameries are at Shepherdsville and one at Mt. Washington have recently been erected and are sure to prove profitable investments.

374 *Seventeenth Biennial Report Bureau of Agriculture.*

Foremost among the many things which stamp the people of Bullitt as a progressive people is the Bullitt County Fair, which is regarded as one of the best in the State.

Shepherdsville has a good graded school, which is ably conducted, and last year erected a handsome school building. It also has a colored school with a large attendance.

Lebanon Junction, the railroad town of Bullitt, lies twelve miles south of Shepherdsville, at the junction of the main line of the L. & N. R. R. and Knoxville division of the L. & N. R. R. and has a population of one thousand two hundred. It has a graded school employing three teachers, and has a good colored school. The town of Mt. Washington lies ten miles east of Shepherdsville, has prosperous churches and schools, and is inhabited by a thrifty, peaceable people.

Among the other towns are Belmont, Pitts Point, Brooks and Smithville. At Smithville is located a large flour mill, which does a big business, furnishing not only the farmers of the surrounding country with flour, etc., but shipping to Louisville and other points.

The only other flour mill in Bullitt is at Zoneton, although there are a number of grist mills in the county, many of them being run in connection with saw mills.

The rugged hills of Bullitt are full of ores of different kinds. In the day of the old stone furnace, all the furnaces in this county were run by ore mined near by, and that ore, said to be of a fine quality, is still here in inexhaustible quantities waiting for capital to take it into the markets of the world.

Natural gas exists in Bullitt in paying quantities. Mack Shiveley, a farmer living on Salt river between Pitts Point and West Point, bored a well about four years ago, and at the depth of something over three hundred feet struck a fine flow of natural gas, which he has been using ever since. It furnishes him an abundant supply of light and fuel, and also supplies him with ample power to run a grist mill. One or two other good wells have also been bored in same neighborhood, furnishing ample light and fuel for their owners.

Bullitt county can boast of the finest building stone to be found anywhere in the State. It lies at Clermont, six miles southeast of Shepherdsville, on the Bardstown branch of the L. & N., in inexhaustible quantities, and is used exclusively by the L. & N. for bridges and culverts.

There is also a fine grade of sandstone in the hills north and west of Shepherdsville, but owing to the difficulty of hauling it, there has been no effort to put it on the market. On the knobs west of Shepherdsville, about seven miles distant is found a fine quality of gray limestone, which would be very valuable if nearer the railroad.

Fruit growing is the chief occupation of the people of western Bullitt. The knobs are covered with thrifty peach and apple orchards. The past two years have not been very successful ones for the peach growers. The yield both years has been small, but prices good. Each successful year's peach crop is estimated to bring about \$60,000 to the Bullitt county orchard owners. Ben Davis, Johnson's Fine Winter, the Greening, Winesaps, and a few other less popular varieties, are the kinds of apples grown in Bullitt.

Bullitt has twenty-six and one-half miles of completed railroad, belonging to the Louisville & Nashville Railroad Company, and about five miles belonging to the Illinois Central Railroad Company.

The plan adopted a few years ago of crushing stone at the expense of the county and letting the citizens along the proposed pike haul the stone on the pike free of charge has worked well, and Bullitt now has some eighteen or twenty miles of pike built in this way, and in addition thereto has recently acquired seven miles of the Louisville & Shepherdsville pike also, seven miles of the Louisville and Bardstown pike, all of either in the country, all of which is now open to the traveling public free of toll. A bond issue of \$75,000 was voted last year for road purposes and the work of building new roads and improving old ones is going on rapidly under the direction of the fiscal court and a road overseer recently elected.

A handsome modern court house has been built by the fiscal court at a cost of \$17,400, and is an ornament to the county and a source of pride to her citizens.

In addition to the improvements before named, Bullitt county last year constructed a first class iron and stone work, wagon bridge across Salt river, at Shepherdsville, costing something over \$23,000 which was paid for out of money in the county treasury and the county is entirely free from debt of any kind whatever, except the road bonds.

There is but one college in Bullitt county, and that is for colored citizens. It was built by Eckstein Norton, for whom it was named,

and has a large attendance.

Bullitt bears the reputation of being one of the most law-abiding counties in the State.

The character of labor employed by our farmers and others is as a rule high and wages very good.

The Bullitt County Fair has done much towards bettering stock. Fine horses and fine cattle, hogs and sheep, can now be seen on the farms of all thrifty farmers.

It is in the Fourth Congressional, Third Appellate, Tenth Judicial, Twelfth Senatorial, and Forty-first Legislative Districts.

BUTLER COUNTY.

In 1810 the county of Butler was carved out of the counties of Logan and Ohio. Two years later Morgantown was incorporated and established as the county seat. The population of the county exceeds 15,000 people.

The surface of Butler county is somewhat broken, hills, flats and valleys everywhere abounding. The soils of the uplands of the limestone section, which are restricted to the southeastern portion of the county, are very rich and productive, and are well adapted to all Kentucky products, particularly to wheat and tobacco; the sandstone uplands of the rest of the county are hardly so fertile, but are well adapted to lighter grains, fruits and melons. The valley lands and bottoms are as rich as any in the State, and their yields of corn can not be exceeded. Nearly all of these last named lands have been clard, and are in a state of cultivation; likewise a great deal of the higher lands, but of these there yet remain thousands of acres in timber.

Poplar, oak, gum, ash, hickory, chestnut, beech and sycamore are the principal timbers of value indigenous to the soil; and these though they have cut and sold to the market for many years, yet abound. Annually thousands of dollars' worth of logs are run down the creeks to Green river, and thence to the local saw mills and the Evansville market. The cross tie business and stave business are now consuming more timber than perhaps any other branch of the lumber industry. Timbered lands command good prices, their convenience to the water

courses or the railroads determine the figures at which they are purchasable. The white oak of this, the Green river section, is claimed to be the finest in the world, awards to that effect having been given in sundry competitive exhibits both at home and abroad.

Everywhere the finest sort of sandstone for building purposes is to be found, and the quarrying and the sale of such stone has come to be one of the principal features of the business of the Aberdeen Coal & Mining Company, a concern to be mentioned hereafter. The clays are well adapted to brick making, and good fire clay is to be found in the county.

Butler county is in the western Kentucky coal fields, and has some of the finest bituminous coals in the State. Its mines have not been developed or its coals worked to the extent they should have been, principally owing to the fact that the county has no railroads within its borders, and is compelled to depend solely on transportation by water. The annual output of the commercial is more than 30,000 tons, and finds a market in Bowling Green, Evansville and intermediate points along Green and Barren rivers. The principal mines are those located at Aberdeen, on Green river, and within one mile of Morgantown. The Aberdeen Coal & Mining Company, and the West Aberdeen Coal Company operate these mines.

Aside from Green river, already mentioned, which flows through the county from east to west, are many minor streams which empty into Green and Barren rivers. Chief among these smaller streams are the creeks known as Big Reedy and Little Reedy, Welch's Indian Camp, Big Muddy, and Little Muddy, Sandy and Panther. Moreover, Mud river, a stream of some magnitude, washes the southern boundary of the county for many miles, and finds its way to Green river at Rochester. Nearly all freights to and from market are shipped by river, and a fine line of steamers ply from Bowling Green to Evansville, affording ready and reasonable rates of transportation. A system of locks and dams on Green and Barren rivers permits navigation throughout the year, and the boats not only run from Bowling Green to Evansville, but go to points far up Green river into Edmonson county, as well. On the latter stream, the Government is constructing a lock between Woodbury and Brownsville, which when completed, will permit all year navigation to the latter point, and prove of incalculable benefit to both Butler and Edmonson counties.

The principal towns of the county are located on the river. Chief among these is Morgantown, the county seat, already mentioned. It

has a population of more than a thousand people and is most picturesquely situated, standing, as it does, on a high plateau overlooking the river. A fine mill, an excellent school, a flourishing bank, as well as many first class business concerns, contribute to make the town a commercial and educational center. Rochester is located on the same stream, by land sixteen miles distant from Morgantown, and by water nearly forty miles distant. It draws its commercial life from three counties which bind at its borders, viz., Butler Muhlenberg and Ohio. Lock No. 4 is here located. It has a first class college and a bank. It has also a splendid roller mill. Its timber merchants do the most extensive business of any in the county.

Woodbury, above Morgantown six miles, at lock No. 5, at the confluence of Green and Barren rivers, is one of the oldest towns in the Green river valley, and draws its trade from one of the richest sections in the county, Huntsville, Forgysville, Barry's Lick, Herschel, Sunny Land and Sugar Grove are thrifty inland villages in the southern section of the county, while Brooklyn, Gilstrap, Welch's Creek, Lee and Reedyville are some thriving hamlets in the northern section:

Either of the three towns, Morgantown, Woodbury, or Rochester, furnishes excellent advantages for the manufacture of furniture and lumber, as well as for the conduct of other business enterprises. Situated, as they are, in the heart of the timber and coal regions of Western Kentucky, with the very cheapest rates of transportation by river to the markets, the cost of living to employees the most reasonable, and the rate of taxation as low perhaps as may be found in any other section of the State, no better towns can be found anywhere for the launching of industries of the character mentioned.

The school system of the county will average with that of any county in the State of like conditions. Some of the most prominent men in the State, and many who have gone into other sections of the nation and won place and honor, have received their early education and life inspirations here.

It is a noteworthy fact that the people of Butler county have not waited for foreign capital to flow into their community to begin the work of development. They have realized their advantages and begun the work which shall bring their county to the forefront of industrial advancement. The most prosperous business concerns, the mining and chief timber industries, are owned and controlled by local capital, and business men of other sections are turning their attention

to these home enterprises, and are seeking investment and business association with them.

Mineral springs, chalybeate and sulphur waters, are to be found in various portions of the county, and some of these have fully as much medicinal value as those of the more widely known and advertised of the State. Old Sandy Spring and Pipe Spring, both near Morgantown, are locally historic and of healing virtues, while the Copperas Springs, in the southern portion of the county, are known far and near. Blowing Springs, situated near the Warren county line, above, above Sugar Grove, is a natural curiosity, and is aptly named. The scenery along upper Green river in Butler county can not be excelled by that of any other in Kentucky. Green river itself is the most classical stream in the State, and its hills and valleys abound with legends of earlier times. Indian Rock, a few miles below Morgantown, bears on its surface, the hieroglyphics of the aboriginal tribes, and, to those who delight in the study of primitive symbols, affords themes of study. Farther down the stream are traces of Indian, or prehistoric mounds, in which are to be found and read the traces of earlier people.

Butler county is embraced in the Second Appellate Court District; in the Third Congressional District; in the Seventh Senatorial District; in the Eighth Judicial District; and, together with Edmondson county, constitutes a Legislative District.

CALDWELL COUNTY.

(Revised, 1907 by Judge G. D. Blalock.)

Caldwell county was the fifty-first organized in the State, and was formed in 1809 from a part of Livingston county. It is bounded on the north by Crittenden and Hopkins, on the east by Hopkins and Christian, on the south by Trigg and Lyon, and on the west by Lyon and Crittenden counties.

The southern portion of the county is level, the soil very fertile which makes it very productive, while the northern part is hilly and heavily timbered with the best quality of oak, poplar, walnut and hickory. There is much valuable stone, which is used to ad-

vantage in different ways, such as keeping the roads in repair, building purposes, and in being made into lime by the two large lime works, which are in operation. Coal has been found in many localities, but it is only being worked in two or three places at present. Spar also abounds in the county and the mines now in operation will likely prove a great source of wealth to the county.

The roads are in very good condition, and are kept so by a county fund raised for that purpose. It has two railroads, which intersect each other at the county seat, one running north and south and the other east and west. They are both of the Illinois Central system.

Caldwell county is one of the best counties in the western portion of the State for stock raising and large numbers of cattle, sheep and hogs are shipped to market every year. Fruit grows well in all parts of the county, consisting of apples, pears, peaches grapes, plums, strawberries, etc.

The Tradewater river with its tributaries waters the northern portion of the county, while the southern part is watered by springs and creeks. There are quite a number of mineral springs in various parts of the county, which are capable of being made beautiful health and pleasure resorts. Some streams capable of operating machinery are found, the water of which is being utilized for such purposes. There are many natural curiosities in the county, such as caves, hills and projecting rocks, towering far above us and often presenting the most beautiful scenery. There is in the county a Spanish fort and an Indian fortification that have many strange historic facts connected with them. There is an ice cave in which may be found ice at any time of the year. There are many caves, some of which have been explored for several hundred yards.

In the northern portion of the county are some of the most beautiful scenes in the way of natural curiosities, consisting of high towering rocks and pinnacles. They are very beautiful in spring and summer and are visited by thousands of people. On top of these is the Indian fortifications.

The agricultural products of the county are corn, wheat, oats, rye, tobacco, fruits and vegetables. The grasses are clover, timothy, orchard grass and bluegrass. The farmers use the best improved machinery.

Princeton, the county seat, a city of about 5,000 inhabitants, is located near the center of the county, and is the center of a

rich agricultural region. It has many factories, foundries and mills.

The county has splendid educational advantages. The public schools of the county are in thriving condition while the city of Princeton can boast of one of the best city schools and colleges in Western Kentucky. Princeton Collegiate Institute enjoys a large and increasing patronage from a number of the surrounding States. The city schools of this city are in good condition and enjoy a good representation outside the city.

Other growing towns in the county are Fredonia, Kelsey, Crider and Cobb. The county has a population of about 16,500. It is situated in the First Congressional, First Appellate, Fourth Judicial, Fourth Senatorial and Ninth Legislative Districts.

CALLOWAY COUNTY.

Calloway county is situated in the southwestern portion of the State, and lies along the Tennessee State line. It is bounded on the north by the county of Marshall, on the east by Trigg county and the Tennessee river, in fact, the Tennessee river forms the whole eastern boundary; on the south, as stated, by State of Tennessee, and on the west by the county of Graves. This county is abundantly watered and well drained by the Tennessee and Blood rivers, and the east and west forks of Clark's river, and their several tributaries, the Tennessee and Blood rivers draining the eastern section of the county and the east and west forks of Clark's river draining the more central and western portions of the county. In the western portion of this county the land is level, while in the eastern section it is broken and hilly. It is a fact, nevertheless, that all the land in the county, as a general thing, is fertile and productive. It is especially fine along the river and creek bottoms, where most magnificent farms are located. The labor on the farms is performed by native white and colored hands, whose services can be procured for from ten to fifteen dollars per month and board. The staple products of the Calloway county farms are corn, wheat, oats, hay, tobacco fruits, vegetables, stock and poultry.

Much good timber of oak, ash, hickory, poplar, beech, gum, dogwood, etc., is yet remaining on the streams and hill land.

A high grade of clay deposits are numerous throughout the county, suitable for the manufacture of all kinds of pottery, tiling, pipe, fire brick, etc. Also there is an inexhaustible quantity of mineral suitable for making paints. These vast deposits of clay and minerals have scarcely been touched, but with the advent of another railroad through the county they will undoubtedly be fully developed.

The public roads are under the supervision of a road supervisor and assistants appointed by the county court and are kept in good condition by the use of graders at the expense of the county, supplemented by labor subject to warning by the road overseer. The best gravel for road building is found here. It is being extensively used by the railroad company and is shipped to Chicago, Nashville, Paducah and other places to be used in road building.

The Nashville, Chattanooga & St. Louis railroad runs through the central part of the county from south to north. A new road now under construction from Cairo, Illinois to Bristol, Virginia will pass through the center from west to east.

School facilities are furnished by the common school system of the State, and in most of the districts are good and comfortable school houses; the schools are well attended and are in a flourishing condition.

Calloway county is situated in the First Congressional, First Appellate, Third Judicial, Third Senatorial and Fifth Legislative Districts.

Post Offices: Almo, Backusburg, Blood, Branden, Brownsgrove, Cherry, Coldwater, Crossland, Daisy, Dexter, Edgehill, Faxon, Flint, Hamlin, Harrisgrove, Hazel, Hico, Kirksey, Knight, Lynngrove, Murray, New Concord, New Providence, Pottertown, Rhea, Shiloh, Stella, Vancleave, Wetzel.

Murray, the county seat, is located near the center of the county on the N. C. & St. L. Ry. It has a population of over 2,500, three banks, three lumber yards, one planing mill, one brick plant, six tobacco factories, one ice plant, bottling works, two newspapers, three beautiful brick churches, an up-to-date graded school building, electric light plant and water works under way; together with usual complement of stores, hotels and livery stables, etc.

with fair prospects for a new up-to-date court house in the near future.

There still remains throughout the county much valuable land uncleared and unimproved, ranging in price from \$5 to \$25 per acre.

CAMPBELL COUNTY.

Campbell county was organized in 1798, and was the nineteenth county formed in the State; when formed, it included Kenton county, and is bounded on the north and east by the Ohio river, on the west by Licking River, and on the south by Pendleton county. It has two railroads running through it, the C. & O. R. R. and L. & N. R. R., together, about thirty miles. Fort Thomas is located in the north end, about three miles south of Newport, with an electric car line from Fountain Square in Cincinnati, to Fort Thomas, and a second line running to Evergreen Cemetery, a distance of three miles, with a fair prospect of being built to Alexandria, the county seat. It also has located in the county the Government rifle range on the bank of Licking river, where every regiment in the United States army comes to practice target shooting. The county is about twenty-five miles from north to south and about seven miles wide from east to west, and because of its being located between the Ohio and Licking rivers, it is said to be the first fruit county in the State, equal to the famous fruit belt of Michigan; all kinds of fruit that are suited to this climate are raised in this county to perfection and in abundance, some farmers having fifty to one hundred acres in small fruit. It was conceded at the Ohio State Horticultural Society that the apples and peaches that came from Campbell county had the finest flavor and the highest and brightest color of any that were on exhibition. The reason given for these qualities is that no difference what course the wind blew, it came over one of these rivers and brought with it a moist or fog that induced this color or flavor, and as it is so close to Cincinnati, the market is as good as any in the country, and for that reason the county is so largely engaged in fruit growing.

There are several fine mineral springs in the county that have been analyzed by Prof. Decory of Cincinnati, and he says they are of the finest of waters, equal to any in the State.

We have two county seats, Newport and Alexandria, have sixty miles of turnpike and four hundred and forty miles county roads, but have a good system of road bridge work in the county.

The common schools are as good as any place in the Union. As a rule all the people take a great interest in the schools and school buildings, and fully 90 per cent of the children at school age can read and write.

The original timber was hardwood, such as ash, oak, hickory, walnut, beech, maple, sugar tree, poplar and buckeye, but 95 per cent is cleared. We have a stock law in this county, and have no use for fences, only for each man to fence for his own stock, and it is as satisfactory as could be.

There is some immigration to this county, mostly Germans, and as a rule, they are good law-abiding people and good agriculturists and horticulturists. Our farmers vie with each other in having the best of farm implements and seeds. All kinds of grasses grow here; the Kentucky bluegrass is indigenous to this county. In the southern part of the county there is regular farming and stock raising, horses, cattle, sheep and hogs, and all kinds of grain and tobacco, but in the northern part it is tilled as a garden and fruit farm.

Campbell county is the third in the State in point of wealth and population. Newport has several iron plants, one large rolling mill and bolt works, one shoe factory, one pipe factory, one watch-case factory, and has a population of about 40,000; has two iron bridges spanning the Ohio river and two iron bridges spanning the Licking river and two suburban towns of about 7,000 each, and the county is as healthy as any place in the land. The face of the county is undulating, so no stagnant water is left. The Ohio river is navigable the year round. Licking is navigable as far as Falmouth about six months of the year.

Our present Congressman had an appropriation made for the improvement of Licking river, and the Government engineers are at work, making a survey with the view of having slack water navigation the year round. Geologists say the glacier flow reaches the upper end of Campbell county and runs through into Kenton and Boone counties, and across the Ohio river into Indiana, and is the furthest south there is any marks of it. There is unmistakable evidence of it in Campbell county.

Campbell county is situated in the Sixth Congressional, Sixth Appellate, Seventh Judicial, Twenty-fifth Senatorial, and Eighty-third Legislative Districts.

Postoffices:—Alexandria, Brayville, Brént, California, Camp, Springs, Carthage, Claryville, Cold Spring, Dayton, Flaggspring, Fort Thomas, Grant's Lick, Gubser, Hawthorne, John's Hill, Kane, Melbourne, Mentor, Newport, A (Dayton), No. 1 (Fort Thomas), Oneonta, Pool's Creek, Rouse, Tenmile, Trace.

CARLISLE COUNTY.

Carlisle county was formed May 4, 1886, from the south half of Ballard county, and is bounded by Ballard on the north, Graves county on the east, Hickman county on the south, and by the Mississippi on the west. The surface is slightly rolling, and the soil very productive. Mayfield creek, along the northern boundary, is the largest stream in the State called "creek." It affords an abundant supply of water that could be utilized for power. In fact it now runs a seventy-five barrel flouring mill, and has been used in years gone by at other places for the same purpose. Bordering along the south line is Obion creek, almost as large as Mayfield creek; has been used for power.

Besides these streams, there is Wilson creek, west fork of Mayfield, Herrington, Lick and Truman, all tributaries of Mayfield; then Skaggs fork of Obion and Cane tributary to Obion, then the chain of lakes, so-called, along the western part of the county, some two miles from the river, that are emptied into the river by Town creek. With these streams always flowing, there is always plenty of water even in the dryest years. Water can be easily found at from twenty to sixty feet underground and is splendid for family use.

The soil is a clay loam; no rock, except in a few places there is drifted gravel of the Paducah variety. Bordering the river the usual rich sandy bottoms skirt the whole western line.

In what is termed bottoms is the better land, if it were tilled; some have been. This land does not overflow so as to drown out the crop, but after rains, it does not dry out and is termed cold, but in reasonable years produces excellent wheat, corn and the grasses.

There are no minerals of any kind known to exist in this county, but there are clays. In this county enough clay can be had to make

a million ton of ware, and the quality is of a good (if not the best) kind. It will make any ware except the pure white. Fortunately the clay is close to where the tile is needed and in the near future the tile will be demanded and the tile works will be a necessity and the clay is there. Fine art tiling articles have been made out of our clays. Again, the clays are within a 100 feet of the Mobile & Ohio railroad.

There are still some very fine bodies of oak timber that can be had, but railroad timbers are supplied from the county in large quantities. Cottonwood can be had in almost unlimited quantities. With our water and wood, paper could be made very cheaply. The great drawback heretofore of the county has been its roads, but now that is overcome. By a system of taxation of twenty-five cents on the one hundred dollars, the roads of the county are worked and are in splendid condition. No tolls, no toll-gate raiders.

The Illinois Central railroad and the Mobile & Ohio railroad both cross the county, having a mileage of about ten miles each, and together furnish all the outlet for our products in any direction. Six hours to St. Louis, thirteen hours to Chicago or Cincinnati, ten hours to Louisville or Memphis, eighteen hours to New Orleans, Mobile or Detroit. With these facilities and the market at our door, the farmers have taken advantage. The berry crop of 1904 exceeded \$100,000, and the beans, spinach, melons, cantaloupes, and such garden products are almost equal to the berry. A year ago, about 2,500 acres of spinach alone were sown. If you are a truck farmer, come to Carlisle.

While this county is healthful, we have mineral springs. McGee Springs, in the northern part, four miles from Bardwell, has been visited by health seekers, with beneficial results. Chalybeate water is found in Bardwell in wells.

Farm lands in the county are worth from \$10 to \$50 per acre, wide range, the difference being largely on account of the proximity to market, the higher priced being for fruits and vegetable lands near railroad stations, and the low priced for out-of-the-way, unimproved lands. If you want land, we can suit you in price. The farm labor is native white, and they are paid about \$15 per month and board.

There is at Arlington a vegetable cannery, whose annual output is worth on an average of \$15,000, tomatoes mostly canned. There are seven merchant's flouring mills in the county, with the capacity of 700 barrels daily.

There are two box factories, making boxes and crates for the berries and vegetables shipped. Several saw mills and two planing mills. The towns of the county are all connected by telephone, which also connects with adjoining counties and Cairo, Ill.

The county seat is Bardwell, an enterprising town of 2,000; has four white and three colored churches, public graded school building, costing \$7,000, and where seven teachers are employed ten months in the year, maintained by taxation at 50 cents per one hundred dollars, ad valorem, and \$1.50 poll; average attendance, 350; non-sectarian strictly; been in operation ten years. The curriculum embraces higher mathematics, Latin, philosophy, etc., and tuition free to all free school pupils. There are also two banks, capital stock, \$36,000; deposits, \$200,000. Hotel, costing \$6,000, opera house, two flouring mills, saw and planing mills, box factory, electric lights, steam laundry; in fact, a first-class, enterprising town. Bardwell is on the Illinois Central railroad. Has a complete system of water works.

Besides Bardwell there is Arlington, just six miles south on the same line of railroad, that is scarcely second—strong rivals. Arlington has a cannery, is the center of the berry trade, has three churches, a bank, and as fine school and mills as Bardwell, and is made up of wide awake business men. Milburn, the old church town, is in the eastern part of the county, and is surrounded by a staid, old religious people. These people near Milburn all live at home and have homes to live in, land well improved and divided into small tracts. It also has a splendid school.

Generally, education is decidedly a fad with our people, and we are willing and do pay local taxes to keep up the public fund. We have no county bonded debt; everything on a cash basis. Taxation for county purposes twenty cents and twenty-five for roads; a total of forty-five cents, and poll of \$1.50. This pays it all and leaves a surplus generally. There never was sale of land for taxes in this county.

Of all these we are proud, but we most delight to tell the outside world that we are prohibition, practically prohibition. There has not been a saloon in the county since 1884, and more than that, whiskey is not sold in the drug stores, nor by tigers, No, not sold at all, and we don't want it.

Carlisle county is in the First Congressional, First Appellate, First Judicial, Second Senatorial, and Second Legislative Districts.

CARROLL COUNTY.

(Revised 1907 by H. M. Froman.)

In addition to a fertile soil, Carroll County has the advantage of location. It lies on the Ohio river half way between Cincinnati and Louisville. The Kentucky river flows through the center to empty into the Ohio at Carrollton. The Louisville & Nashville railroad runs through the entire southern part of the county, while the C. W. railroad connects the L. & N. with the river at Carrollton, thus giving to the County both by railroad and river the best facilities for travel and transportation. These advantages together with its agricultural productiveness constitute the basis of the fine progress that has been made along the lines of business success, improvements, educational and social advantages.

No finer farm lands are to be found in this country than the Kentucky and Ohio river bottoms. In the Ohio bottom especially, which maintain an average width of one mile the full length of the County, are to be found rich improved farms and some almost palatial residences. The smaller streams of the Little Kentucky, Locust, Eagle Creek and White Run flow through productive bottom land, while the hill portion of the County, in fertility of soil, well improved farms and pleasant homes compares favorably with the Bottoms. Burley tobacco is the specialty of the county, large crops of the finest quality being grown, as also large crops of wheat, corn and hay. Carroll County has also the Blue-Grass which has given to Central Kentucky its world-wide fame, and, as a consequence, large numbers of sheep, cattle, horses and mules are raised.

A steady improvement is being made in all methods of farming. On almost every farm are to be found the best improved machinery and convenient, commodious farm buildings.

The farmers are getting each year much valuable information through the Farmers' Institute and are coming to realize the value of organization for the control of the price of their products. A special effort has been made by the tobacco growers through pooling their tobacco, as a result of which tobacco is commanding a better price than it has done for years.

The county has excellent roads, all of the principal ones of which have been macadamized and so many of these pikes intersect the

county that almost every farm house is easily accessible while the transportation of the mail by rural free delivery is greatly facilitated. These pikes connecting with other pikes form continuous lines of good roads connecting Carroll County with Covington, Lexington, Frankfort, Paris, Georgetown and even the mountain districts. Fine substantial iron bridges have been built across the streams on all the principal thoroughfares of the county, thus giving to the automobilist safe and pleasant roads in every direction.

Labor is scarce and work abundant, wages range from \$15 to \$18 per month with board; from \$20 to \$26 per month without board.

The people are awake to the importance of educational advantages and schools of a high character are maintained in almost all school districts. The school buildings are adequate with creditable furnishings, while teachers holding first-class certificates are required.

The pride of the county is the Tri-County Fair at Sanders. It has beautiful grounds, spacious amphitheater and all necessary fair buildings. Through the energy and ability of Shirley Bros. it has been made a complete success. Sanders is a fine location for a fair, accessible by rail from all parts and already much frequented as a health resort for the sake of the waters of the Blue Lick and Lithia Springs to be found here.

Carrollton, the county seat, a city of the fourth class, is situated on the Ohio river at the mouth of the Kentucky river and covers an area of one square mile. The site is ideal for a large city. The inhabitants number about 3,000 of which 300 are negroes. The principal articles manufactured are lumber, whiskey and tobacco. The Carrollton Furniture Manufacturing Company makes exclusively high-grade furniture.

Adamson Bros. Co. own and operate one of the best saw and planing mills in the county, do an extensive business and ship a great deal of lumber South. The Carrollton Brick Yard Company have an annual output of two millions good first-class brick. Then there is J. F. Hill & Co. tobacco factory, Cameron & Co. roller mills; Wood Bros., plow factory, Ebbings Broom factory, the Geier Silkweed Company, the Chas. Fini cigar manufactory, the American Tobacco Company, and the canning factory.

Carrollton has two National banks, four hotels, an opera house, two weekly newspapers, two livery stables, three drug stores, a large dry goods establishment, and a number of general stores, also an ice

plant and creamery, groceries etc., representing the various lines of merchandizing.

The Independent Long Distance Telephone and Telegraph Company has an exchange of about 300 subscribers. The Cumberland Telephone Company has no exchange, but has a long distance office at the edge of town.

At the end of Sixth street is a Blue Lick spring, from which constantly flows a mineral water of great medicinal properties.

The city is lighted by electricity and has a splendid system of water-works. Fire protection is ample. The water supply is the Ohio river. The reservoir is situated on Butler's Hill, back of the city and affords 110 lbs. pressure. The fire department consists of thirty-six part-paid men, 1,000 feet of hose and other equipment. Carrollton has a very handsome Government building which cost \$35,000, and was obtained for this city through the influence of Hon. A. S. Berry, of Newport, a former Congressman from this district.

A commercial club of about seventy-five progressive and enterprising citizens are diligently seeking to promote the interest and welfare of the city, especially from an industrial standpoint. It was through their endeavors and perseverance that the railroad to Worthville was built, thereby connecting our manufactories with the L. & N. "Short Line" and the outside world. The right of way and franchise has been secured for an electric railroad running along the river from Cincinnati to Louisville.

The natural location of the city is a very desirable site for manufactories of all kinds. Coal is being brought down the Ohio river in barges from Pittsburg, also down the Kentucky river from the mineral and coal fields of our own State. Also large rafts of logs are being continuously floated down the Kentucky river from the timber land of the State.

Fishing on the Kentucky river is exceptionally fine. The Kentucky bridge at Carrollton, connecting the upper and lower portions of the county and costing something less than \$100,000, is an achievement of which the people of the county are justly proud.

The public schools of Carrollton occupy two large two-story brick buildings and are an honor to the city. Besides the graded schools, there is a St. John's Catholic school and a free school for colored children.

Ghent, the next town in size and importance, is situated on the Ohio river about eight miles above Carrollton, and opposite Vevay,

Ind., a city of some 4,000 inhabitants. It is exceedingly well built and well laid out and stands on a beautiful plain above high-water mark. There are a number of beautiful homes and fine business houses. The Masonic Temple and public school buildings are not equaled by any town in the State, approximating its inhabitants. It has five churches, a bank, a roller mill, saw mill, three large tobacco re-handling houses and re-drying some millions of pounds per annum. A large lumber yard, a telephone exchange and two rural free delivery routes.

Ghent has considerable reputation for culture. The Masons, I. O. O. F., Knights of Pythias and Red Men have each their respective lodges. The Tom Barrett, U. V. C., the second largest chapter in the State is located here, and the H. and P. Literary Society organized January 1, 1889. This society was organized by Miss Caby M. Froman, who has been kept in office as its president ever since its organization.

The farming country surrounding Ghent for a radius of five miles cannot be excelled in the State.

Carroll county is in the Sixth Congressional, Fifth Appellate, Fifteenth Judicial, Twenty-first Senatorial and Fifty-third Legislative districts.

Carroll county was organized in 1838 and named in honor of Charles Carroll, of Carrollton, Maryland.

CARTER COUNTY.

(Revised 1907 by W. A. Davis.)

Carter county was formed in the year 1838, from parts of Greenup and Lawrence counties, and was named for Col. Wm. G. Carter. It was the eighty-third county formed in the State. It is located in the extreme northeastern part of the State, having only one county, that of Greenup, between it and the northern boundary, and only one, that of Boyd, between it and the eastern boundary.

The surface of the county is divided into hills and valleys, but there are no mountains nor any near its borders. A good many acres of fertile table lands are found within its boundary. The principal water courses are the Little Sandy river and Tygart's

392 *Seventeenth Biennial Report Bureau of Agriculture.*

creek, and they and their tributaries constitute the water courses of the county. The waters of these two streams are used for the operation of a number of water mills and steam mills and for floating timber to market and to the mills along their banks. No steamboat navigates them. The soil in the eastern portion is largely alluvial, a light sandy loam that produces well and washes very little. The western portion has a limestone foundation, and the soil is fertile.

The county is well watered and drouths are almost unknown. The soil is adapted to the growth of corn, oats, wheat, rye, barley, millet, sugar cane, tobacco, and all kinds of vegetables usually grown in the temperate zone.

The timber consists of poplar, oak, and pine, but a great portion has heretofore been severed from the ground and marketed. It is now sent to market in the form of lumber, saw logs, cross-ties, square timber, hoop poles and hoops.

Beneath the soil is found in many localities iron ore, limestone, fire clay, cannel and bituminous coal. No iron ore is now being taken out, but a number of excellent fire clay mines are in operation and are being worked profitably, and with every prospect of more extensive and profitable development.

There are several large coal mines in operation, and the Kentucky Cannel Coal Company, whose mines are located on Stinson creek, are mining a very superior grade of coal, all of which is exported, Spain being the principal customer. Our greatest natural curiosity is the Carter caves in the west end of the county, which are grand and have been explored for a distance of ten miles, or more, and abound with grand scenery, and are visited every summer by a large number of tourists. There are caves also at Oligononk, several miles north of the great caves. We have sulphur wells that have medicinal properties which are being used by a limited number of people for their medical properties. They are situated near Willard, and at Aden Springs. So far, no mills of large capacity have been erected, but several of small capacity for grinding wheat are in operation. The farming lands are being more extensively developed, better care is being taken of them and the grade of stock is being improved. Tobacco is the staple crop.

At Olive Hill a second fire-brick plant much larger than the first has been established and employing from 300 to 500 additional men at wages from \$2.00 to \$4.00 per day. Another fire-brick

plant at Soldier in the extreme western part of the county employs from 200 to 300 men and turning out daily from 25,000 to 30,000 bricks.

Three additional stone-crushing plants have been established recently, viz: One at Limestone, three miles from Olive Hill, one at Lawton switch, four miles from Olive Hill and one at Carter, in the western part of the county. In the eastern section of the county extensive coal mines have been opened and are now in operation, also an extensive mine of fire-clay is in operation, shipping large quantities daily.

Capital could be profitably employed in the country in flour mills, furniture factories, fire-brick works, wagon works, or tobacco rehandling houses with almost certain success. The Chesapeake & Ohio Railway passes through the county from east to west, and the Eastern Kentucky from north to south. Transportation facilities are amply sufficient for all the demands of the people. The public roads are not macadamized, but are kept in fair condition and are easily traveled except in prolonged seasons of rain in winter. They are maintained under the provisions of the general law, the county being divided into two road districts, and the roads being worked by persons in the various districts, under a supervisor appointed by the fiscal court. The principal labor is farm work, and the average wages for that class of work has increased to \$25 per month and board. The skilled labor about the mines, and manufacturing plants is much higher and has also increased largely. The common school system is flourishing and improving all the time as to methods and teachers. There are excellent graded free schools at Denton, Grayson, Olive Hill, and Willard in a most satisfactory condition. The sentiment among the people is for better educational facilities. Timber lands sell for about five to ten dollars per acre. Timothy, clover, bluegrass and orchard grass flourish. Grayson is the county seat; contains about eight hundred inhabitants, four churches, Christian, Presbyterian, Methodist, and colored Methodist. Has a fine graded school, employing three teachers, and is in session nine months in the year. A new \$40,000 court house, a number of dry goods stores, two groceries, two drug stores, two millinery stores, two hardware stores, two blacksmith shops, two undertaking establishments and one steam mill. Other important towns are Denton, Willard, Olive Hill, Carter City and Enterprise. At the first two, or near them,

extensive coal mines are in operation. Carter City and Enterprise are timber centers, and near the latter large deposits of asphaltum. The population of the county is now over 20,000. The climate is very healthy, and the people hospitable and industrious.

Carter county is in the Ninth Congressional, Sixth Appellate, Twelfth Judicial, Thirty-fifth Senatorial and One Hundredth Legislative Districts.

CASEY COUNTY.

(Revised 1907 by M. L. Sharp, County Judge.)

Casey county was organized in 1806 out of a part of Lincoln county, and has four hundred and forty-four square miles of territory. It is located near the central part of the State and is bounded on the north by Boyle, on the east by Lincoln and Pulaski, on the south by Russell and Adair, on the west by Taylor and Marion. The surface of the county is broken and is adapted to the cultivation of wheat, corn and tobacco.

The upland produces corn, wheat and other grains and is especially productive of tobacco and fruit. Within the last few years much tobacco of the finest quality has been grown and as the timber is removed, the lands are cleared for this product.

Green river runs through the central part of the county and the land in this valley is of the finest quality, being adapted to the growing of corn, wheat, oats and hay.

The North Rolling Fork of Salt river traverses the northern part of the county and the land in this section is as fine as any in the State. The land in the eastern part of the county is limestone soil and is suitable for farming purposes and is especially adaptable to the growing of apples, peaches and pears.

The county is well supplied with turnpikes and the dirt roads are good and are kept in repair by the general road law of the State.

The timber of the county is unsurpassed by any in the State, though great inroads have been made on it of late years.

The schools are in good condition, with commodious houses, and an excellent corps of teachers. There is a school at Middleburg, in the eastern part of the county, in which all the higher branches are taught.

Liberty is the county seat, situated on Green river, and has about 1,000 inhabitants.

Casey county is in the Eleventh Congressional, Third Appellate, Twenty-ninth Judicial, Eighteenth Senatorial, and Forty-third Legislative Districts.

CHRISTIAN COUNTY.

(Revised 1907 by Dr. J. D. Clardy.)

Christian county was named in honor of Col. William Christian, a noted soldier and Indian fighter, and formed in 1796 out of a part of Logan county. It is situated in the southwestern part of the State and is a border county to the State of Tennessee. Is one of the largest and most productive counties in the State, producing more wheat and more tobacco than any other county in the State. Has produced the enormous amount of 17,000,000 pounds of tobacco in one year.

Christian county is about equally divided between the sub-carboniferous limestone formation, which is the basis of the southern, and the carboniferous lime and sandstones, which are the basis of the northern half of the county. The northern half is broken, and in some parts quite hilly. The soil, while not so rich as the southern half, responds kindly to modern methods of good cultivation, and excellent corn, tobacco and other farm crops are grown. It is far better adapted to the use of commercial fertilizers than the southern part of the county, and with their use makes the finest quality of tobacco. It is also much better adapted to the growth of fruits. The southern half of the county is level or slightly undulating, has a rich clay soil, well adapted to the growth of wheat, corn, tobacco and all other products which will grow in this latitude. The northern half of the county is heavily timbered, of which there still remains an ample supply for all purposes, and of the best quality, the hard woods mostly abounding. There is also an ample supply of coal and iron ore. This is surely a most desirable county for general farming and stock-raising.

The principal water courses are Little River, Pond River, Red River, West and Little West Forks of Red River, Tradewater, Sinking Fork of Little River and a few other minor streams. Excellent

water-power mills for other manufacturing purposes are furnished by Little River, West Fork, Pond River and Tradewater; none, however, are navigable for steamboats.

In the southern part of the county the soil is a rich grayish or dark stratum, six to ten inches deep, underlaid with a very red clay. The northern half of the county is a sandy, and in some parts, gravelly soil, underlaid with a subsoil of yellowish clay.

The timber of Christian county is of excellent quality, the hard wood greatly predominating, such as red oak, white oak and post oak. Also some walnut and considerable poplar.

There is probably one-third of the county still nominally in timber, but much of the best has already been sawed up into all kinds of building lumber and marketed in this form. Timber lands are worth all the way from five to forty dollars per acre, owing to location and amount of timber still uncut.

The mineral deposits consist mostly of bituminous coal, iron ore and building stone. Quite a number of mines have been opened, furnishing employment for many hands and yielding many thousands of tons of coal annually. The coal fields are found in the northern part of the county, occupying, however, a much less area, and not worked to anything like the same extent of the great mines of Hopkins county. Very valuable building limestone and in unlimited quantities is found in this county. No gas or oil has been found in paying quantities.

In some parts of this county may still be found what is called Indian "mounds," in which are found many relics of this most interesting race of people, now rapidly passing away. There are quite a number of mineral springs and wells, with water containing valuable medical qualities. These waters are used by neighbors and casual visitors, but none of them claim to be public "health resorts."

Quite a curious freak of nature is found on the border of this county and Todd. It consists of a huge mass of limestone rock which rises almost perpendicularly to the height of two hundred feet above the surrounding plain; covers about one acre in area and furnishes from the top a commanding view of the surrounding country for many miles. The top is comparatively flat, with a stubby growth of trees, and furnishes a picturesque spot for picnics and other social gatherings.

There are quite a number of excellent wheat and corn mills, run by

water power, in this county. In most of these mills the new "roller process" for making flour has been introduced, and their total capacity is 1500 barrels per day. There are also other manufacturing establishments for both iron and wood work in the smaller towns of the county. There are, however, ample opportunities for further development in this line and with promise of good results. The more important manufactories will be more particularly described in connection with a description of the city of Hopkinsville.

We have in this county no direct water transportation, but are in easy reach by rail of the Ohio and Cumberland rivers. There are in this county about seventy-two miles of railroad; thirty miles of the L. & N. line from Nashville through Hopkinsville to St. Louis. The Princeton branch from Clarksville to Gracey, twenty-seven miles; fifteen miles of the Illinois Central, running from Hopkinsville to Evansville; and more recently the Tennessee Central, to Hopkinsville, about twenty miles, in this county. These roads give fairly good facilities for the transportation needed in the business of the county.

The roads in this county are, for the most part, excellent in the summer, but when the fall rains and the freezing come, where not macadamized, are of the very worst. The antiquated system of calling out the "hands" between the ages of eighteen and forty-five has been changed to the more modern plan of working them by taxation.

The county has recently voted to issue one hundred thousand dollars in county bonds, for the general improvement of the public roads, and for building new turnpikes in different parts of the county. From the proper administration of the new system we hope in the near future to see Christian county take the lead in the work of good roads.

The county has purchased all turnpikes and made them free of toll.

Farm laborers are plentiful in this county, largely furnished by the colored population, of which there are about fifteen thousand in the county, and I must say to their credit, they make the best every-day farm laborers we are able to get. The average price of farm labor per month with house and board is, for men, \$11 to \$12.50; without board, \$15. The average assessed value of land in this county is about \$10 per acre, 405,071 acres.

The facilities for acquiring an education, both common school and classical, while possibly not up to the standard of some other States, are good; with a common school taught in every school district, with separate schools for white and colored children, no child need go without a fairly good business education. There, are, also several high schools and colleges where a full classical education can be obtained, notably the "South Kentucky College," for both male and female students, and the "Bethel Female College," exclusively for females.

Hopkinsville, the county seat of Christian county, is a handsome, well built city of over eight thousand inhabitants, with the best built streets and sidewalks of any city of its size in the State, with all modern improvements, such as electric lights, water works, etc. Several manufacturing establishments have recently greatly enlarged—Forbes & Bro., now Forbes' Manufacturing Company; lumber planing mills, extensive manufactory of Mogul wagons, employing some 250 hands; the extensive addition to the Acme Mills & Elevator Company will increase the capacity from 350 barrels per day to 1,000 to 1,200 barrels per day. As mentioned above, with two excellent colleges, a high school, an excellent system of graded schools for white and colored students, its educational facilities can hardly be surpassed in any city in the State.

Hopkinsville is centrally located in the great dark tobacco growing district, and, with seven firms, commission merchants and twelve large warehouses, affords ample facilities for the handling and sale of all the dark varieties, including a large amount of export tobacco, selling annually from ten to twenty-three thousand hogsheads.

It seems a little strange, with all this raw material and every facility that could be offered, there is but one plug tobacco factory and one cigar factory. Here is an opening which certainly gives promise for profitable employment of large capital and many laborers.

There are a number of more or less important smaller towns in this county. Of these, Pembroke is the most important with one thousand inhabitants, with a large trade in tobacco and wheat, and well represented in other branches of trade, and citizenship of most excellent and well-to-do people. Other towns are Lafayette, Gracey, Julian, Newstead, Howel, Garrettsburg, Bell, Oak

Grove, Kennedy, Bellview, Crofton, Kelly and, not least, Fairview, celebrated as the birthplace of Hon. Jefferson Davis, president of the Confederate States.

This county is well supplied with banking capital, five banks at Hopkinsville, with capital stock of nearly \$500,000, and deposits of \$900,000; two banks at Pembroke, one at Lafayette, and one at Crofton.

There has been no special influx of population, but a gradual and natural increase, now amounting to over thirty-five thousand inhabitants. In the past few years, there has been a general improvement, not only in the methods of farming, but in stock raising, road making and in education. The county has about one hundred churches, a number of parsonages and one hundred and sixty school houses.

The State and county tax is \$1 on the \$100; county tax, 50 cents, and State tax, including school tax, 50 cents.

Christian county is in the Second Congressional, First Appellate, Third Judicial, Sixth Senatorial and Tenth Legislative Districts.

CLARK COUNTY.

(Revised 1907 by R. R. Perry.)

Clark county was organized by act of the Legislature in December, 1792, out of parts of Fayette and Bourbon, and was the fourteenth in order of formation. It originally comprised most of the territory between the Kentucky river and the Middle Fork of the same and Cumberland Gap on the east and south, Licking river and Pound Gap on the northeast and extending from Boone's creek to the Virginia line. Four years later much of this territory was taken off by the formation of Montgomery county. In 1806, it yielded part of its territory to the new county of Estill, and in 1852 it contributed to the formation of Powell.

It was named for Gen. Geo. Rogers Clark, and Winchester, the county seat, was named for Winchester, Virginia, by John Baker, who once owned the land on which the city now stands.

The county stands on the dividing ridge between the waters of Kentucky and Licking rivers, and along the Kentucky and Red

rivers. The southern and eastern portions are drained by Lulbe-grud, Boones, Upper and Lower Howards, Two Mile, Four Mile creeks and Red river, all tributaries of Kentucky. The northern part is drained by Stoner, Strode's and Hancock creeks, which flow into the Licking. The Kentucky river borders the southern line of the county for about twenty-five miles, and the new lock at Valley View brings slack water navigation to Ford, in the county. At Ford, another lock is completed, and carries navigation above Red river. Docks will soon be completed and much freight will go by water to Louisville and other Ohio river cities.

The soil varies much in quality. A large portion of it is composed of the best of the famous bluegrass lands of the State, and is worth as much as similar land anywhere. For many years the Burley tobacco of this section of the county has broken the record price of the year in the Louisville and Cincinnati markets. Other portions of the county are hilly and broken, but produce well. In the extreme eastern portion of the county land is quite thin. Fine marble building stone and stone for lime exists in various portions of the county, and evidence of oil and gas are strong in the eastern part, and Barytes is being mined in the western part of the county.

Very little timber is left in the county, although some walnut lumber is still shipped from here, most of it going to Europe.

The crops are those usually found in the bluegrass region; Corn, wheat, rye, oats, alfalfa, hay, Burley tobacco, hemp, and bluegrass seed are grown, while of late years considerable quantities of small fruits, principally strawberries, are raised. More attention is also being given to fruit growing. Owing to the natural fertility of the soil, not much attention has been given to the use of fertilizers. The latest and most improved farming implements are generally used.

Clark county has always stood high in stock raising ranks, being especially noted for her shorthorn cattle. More cattle are sold from this county than from any other in the State in proportion to its size. Of late years, considerable attention has been given to the breeding of Jerseys and other breeds of dairy cattle. Horses, mules, sheep and hogs receive close attention, and of late years, Winchester has been the seat of a thriving trade in eggs and dressed poultry, including thousands of turkeys, which bring highest prices in the markets of Boston and other Eastern points.

The 255 square miles in the county are traversed by 235 miles of turnpike and 200 miles of dirt roads, all of which are free and are kept up by taxation, under a road supervisor.

Three independent and competing lines of railroad run through the county, giving Clark county more miles of railroad in proportion to area than any county in the State, except Jefferson. The Louisville & Nashville passes through the county from north to south, the Chesapeake & Ohio from east to west, while the Lexington & Eastern runs from the Kentucky river coal fields to Lexington in the same general direction as the C. & O., but southeast.

Clark county's taxable wealth is about \$11,000,000 and the credit of the county is of the highest class. Her bonded debt is not burdensome and is being steadily reduced. The price of farm land runs from \$5 per acre to over \$125 and the average assessed value of land is about \$40 per acre, making Clark one of the four richest counties in the State, outside of the five which contain large cities.

The big saw and planing mills at Ford, and the planing mills, hogshhead factories, flour mills, hemp factories, and bluegrass seed plants and many other manufactories give remunerative employment to skilled and efficient workingmen. Farm laborers receive \$10 to \$20 per month and board, but much of the best land is tilled on the "shares."

The public schools of Clark county are above the average and most districts have good schoolhouses, which are well equipped.

Winchester is the county seat of Clark, on the Western border of the great mountain region of Eastern Kentucky—a rapidly developing section of vast mineral and timber wealth.

The three railroads which penetrate that region converge at Winchester, thus making it the natural, as it is the actual, base of trade for that section.

Winchester has grown more rapidly than any city in Kentucky during the past five years and the rate of growth is still increasing. In 1900 the population was 5,964. It is now 10,000 within the corporate limits, with enough in the immediate suburbs soon to be taken in to raise the total to 11,000.

The assessed value of its property for purposes of taxation is \$3,500,000.00. The rate of taxation for all purposes, municipal and school, is \$1.10 per \$100.00.

402 *Seventeenth Biennial Report Bureau of Agriculture.*

Railroads: Chesapeake & Ohio, Louisville & Nashville, and Lexington & Eastern. The first two are trunk lines running north and south, and east and west. The third penetrates the heart of the mountains, dividing the angle formed by the crossing of the other two at Winchester.

Public Utilities: Electric street railway, electric lights, natural gas for heat and light, complete water works, telephones, excellent fire department, free delivery of mail.

Schools: Kentucky Wesleyan College (the State institution of the Methodist Church) and a fine system of public schools.

Manufactures: Of gasoline engines, iron foundry, wood boxes, spokes and hubs, hogsheads, artificial stone, granite brick, clay brick, lunch boxes and novelties, carriages and buggies, roller mills, planing mills, hemp factory, and many smaller concerns.

Miscellaneous: Four banks, \$2,000,000 deposits, large printing plants, newspapers, branch of American Tobacco Co., tobacco re-handling houses, grass-seed cleaner, etc.

Over half a million dollars was spent in new buildings and public improvements last year, and it is estimated by contractors that between two hundred and three hundred new buildings will be constructed this year. This city is the official headquarters of the White Burley division of the Society of Equity. Six rural routes carry mail to all parts of the county.

Winchester has the finest hotel in Kentucky, outside of Louisville, having been recently built at a cost of over \$100,000. To meet the increased business, a large union depot has just been completed, which is the handsomest in Central or Eastern Kentucky, and another under construction for the Lexington & Eastern.

Ford, situated on the Kentucky river, where the L. & N. crosses, is largely engaged in lumber manufacturing. About 25,000,000 feet of timber is cut here each year. Much of it is exported to Europe, and the weekly pay-roll of the mills is quite large.

The Masons, Knights of Pythias, Odd Fellows, Red Men, Elks, Maccabees, Eagles and other secret societies have prosperous lodges here.

Clark county is situated in the Tenth Congressional, Seventh Appellate, Twenty-fifth Judicial, Twenty-eighth Senatorial and Seventy-fourth Legislative Districts.

CLAY COUNTY.

(Revised, 1907 by J. R. Burchell.)

Clay, being one of the mountain counties of the State, lies in the southeastern part on the head waters of the South Fork of Kentucky river, well up among the small mountains and hills of the Cumberland range. It is bounded on the north by Jackson and Owsley counties, on the west by Laurel, on the east by Leslie, Perry and Breathitt and on the south by Knox and Bell. Clay, unlike many other mountain counties, is not hemmed in by mountains and hills, but on the contrary has many broad fertile valleys extending far back from the streams; most of these valleys are rich and productive, growing abundant crops of most every kind peculiar to Kentucky. The valleys are also enriched by annual overflow of the streams as well as washing from the wooded hills and mountains, and need no fertilizing or special preparation to make them bear abundant crops. Besides their fertile valleys that are on most every stream in the county, there are fertile hillsides and coves that are in cultivation, and many more acres in woodland that are available for cultivation when needed. The main water courses in the county are part of the south fork of the Kentucky River, and the tributaries that go to make up this fork, are Goose creek, Red, Bird, and the many smaller streams which are navigable at high tide. Rafts of timber and many loose logs go out annually to the different lumber firms along the Kentucky river. The larger streams can carry flat bottom boats loaded with salt and coal. Large quantities of salt were boated off down their streams from the Goose Creek Salt Works in operation not many years ago, and at that time this salt industry was one of the main sources of revenue for Clay county, furnishing salt to most of the State and also to Virginia and Tennessee. This county has great undeveloped mineral resources, 90 per cent of the county being underlaid with coal of the finest quality. Sixty per cent of her land is covered with timber of all kinds indigenous to the State. Salt deposits in abundance, oil, gas, fire clay, lead, saltpetre, alum, etc. In boring for oil in this county no oil has been found in paying quantities but sufficient has been found to demonstrate that it is

here and is only waiting development. Gas wells have been developed giving a high pressure, available for any purposes for which it may be used. Lands are being leased for mineral purposes all over the county. This large area of outlying forest land furnishes abundant pasture for cattle, sheep and hogs in the spring, summer and fall, and all stock does well on this range, coming in sleek and fat in the late fall. Hogs do well in the winter season even on the acorns of chestnut oaks that are most always abundant. The scenery along the water courses and mountain ranges is not surpassed by many places in its grandeur and beauty. A great many visitors come to Clay county for their summer outing and the number keeps increasing as they learn more of its health and scenery. The high altitude of some parts of the county make it a fine fruit growing country. All kinds of fruits that are grown in the State, are grown here, and grasses of most kinds flourish. Wheat, corn, oats and all of the small grains are cultivated more or less. Tobacco does well, but is only cultivated for home use. Many cattle and sheep are driven out from the county every year to the different cattle markets of the State, and this is an ideal place for sheep and goats, especially for the Angora goat, which could thrive here nearly the whole year. The population at this time is about 16,000; of this number 2,800 are males over 21 years of age. Our public schools are improving in efficiency, there being 94 white and 5 colored districts in the county, with an enrollment of about 6,200 white and 175 colored children of school age.

Besides the common school facilities there are three high schools or academies in the county, the Edward Memorial Academy at Manchester, the Marvin Baptist School at Oneida, and a branch of Berea College at Burning Springs. These institutions are supported severally by the Presbyterians, the Baptists and by private contribution from different parts of the United States and the countys' own citizens. The intelligence of the majority of the people of Clay County compares favorably with any County in the State. Her people are of the old Virginia and South Carolina stock of Scotch Irish and English descent. The county seat of Clay is Manchester; the smaller towns are Oneida, Burning Springs and Bengé. Clay county with her abundant mineral and other natural resources offers to the investor who wishes a liberal return, a great and varied field, and the time is here now when she is being and will be connected with the

more thickly settled part of the State by telephone, telegraph, tractions and railroads. There is now on foot a project to build an electric or traction road from her nearest railroad point at one end of the county to the nearest point to the road at the other end, a distance of 54 miles through the center of the County and to connect with the important neighbor towns, with a good pike to each county seat. One line of pike is now under construction from Barbourville to Manchester. Clay County is getting the benefit of the fine lectures and farmers' institutes inaugurated by the Agricultural Department of the State and I think is awakening to the importance of the better methods of farming and farm improvements. Nowhere in the United States can people live so cheaply and well, on a small income as they can here in the Southeastern part of Kentucky; coal and wood for fuel to be had for the little labor attached to getting it; abundance of pure water; rents are lower than anywhere; land cheap, and plenty of it. Clay County is in the Seventy-First Legislative, Thirty-Third Senatorial, Twenty-Seventh Judicial, Eleventh Congressional, Third Railroad Commission and Fifth Appellate District of the State.

CLINTON COUNTY.

(Revised 1907 by R. M. Ewing.)

Clinton county was created by an act of the Legislature approved February 20th, 1836 and the territory within its limits was taken from Wayne and Cumberland counties.

Much of the surface is broken by spurs of the Cumberland mountains which enter the county from the east and extend well into the center. These mountains contain veins of bituminous coal of fine quality and easy of access, the veins are from two to five feet in thickness. A large part of the mountain tops and slopes grow a fine quality of red cedar. The high altitude and perfect drainage makes this a good fruit growing county. Between these spurs are fertile valleys under a good state of cultivation, yielding good crops of corn, wheat, oats, clover, orchard grass, timothy, fruits, etc. The western portion of the county is rolling and the soil for the most part is thin and does not yield well without a fertilizer and good

tillage. Potatoes and garden vegetables are raised in abundance in all parts of the county, the soil usually having special preparation for these purposes. The gardens of to-day are larger and receive more care and cultivation than in former years. The soil and climate of the whole county is adapted to the growth of fruit trees which yield fruit of the best quality. The peach crop rarely fails on the elevations of the county, but do not give satisfactory yields in the lowlands. There is an abundance of fine timber in the county, such as poplar, white oak, black oak, hickory, sugar-tree, cedar, chestnut, maple, elm, dogwood, beech etc. Poplar is almost gone and the valuable black walnut is seen no more. There is an abundance of blue, gray and white limestone and other stone suitable for building purposes. Also two or three quarries of good sand stone, with suitable grain for sharpening tools. The whole county is well watered in addition to the rivers and creeks, there are many bold springs of pure water in all parts of the county. Salt has been manufactured on Willis' creek in the northern part of the county, and it has been fully proven that Clinton is in the oil belt. Recent developments have given very satisfactory results in the oil territory. The capacity of some of the new wells is as good as in any oil field known. There is an abundance of marl, which, if utilized, would enrich a great deal of the land. The climate is very healthy. There has never been an epidemic among the people of this section and fevers are rare.

There are chalybeate springs on Sewell mountain, a high plateau northeast of Albany, the county seat, where a view of the surrounding country for many miles can be had, which gives great pleasure as the scenery is so varied. A hotel has been erected and pleasure grounds laid out which makes the place very inviting, as it is perhaps the coolest summer resort south of the Ohio river. There are also numerous sulphur springs in various parts of the county.

The Cumberland river on the north is navigable for part of the year from Nashville, Tennessee to Burnside, Ky., a station on the Cincinnati Southern Railway. The roads of the county are in good condition generally. The falls on Indian creek near Seventy-Six are perpendicular about seventy-six feet, affording water power for mills. The price of farm lands varies from \$5 to \$50 per acre. The average price perhaps about \$20. The price of farm labor will aver-

age about \$12 per month for men. There are no foreign colonies in the county.

There is a good opening for vegetable and fruit canneries and a woolen mill, especially the latter.

Albany is the county seat, in the southern part of the county, and is abundantly supplied with water by two bold springs and many wells. At this time there are six general stores, two drug stores, two grocery stores, one harness shop, one furniture store, three blacksmith shops, two hotels, one water mill and one steam roller mill with saw mill, planing mill and carding factory, one high school, two banks, four churches, but no saloons. The county has neither railroads nor turnpikes.

Primitive customs prevailed for many years and many good people emigrated to new countries but we have made some improvements which seems to have turned the tide in our favor. Clinton county is situated in the Eleventh Congressional, Third Appellate, Twenty-eighth Judicial, Sixteenth Senatorial and Thirty-sixth Legislative Districts.

The postoffices of the county are Albany, Alpha, Browns x roads, Cartwright, Cumberland city, Desda, Kendrick, Forest Cottage, Highway, Hobart, Huntsville, Ida, Illwill, Shipley, Maupin, Norvel, Nora, Osco, Rolan, Savage, Seventy-six, Snow, Marlow, Wago, Watauga and Zenobia.

CRITTENDEN COUNTY.

(Revised 1907 by Chas. W. Fox, Secy. of Crittenden County Farmers Club.)

Crittenden county was formed out of part of Livingston county in 1842, and made the number of counties then in the State ninety-one.

It is situated in the southwestern part of the State on the Ohio, Cumberland and Tradewater rivers. The Ohio river forms its northern boundary, while on the east it is bounded by the counties of Union and Webster, on the south by Caldwell and Lyon and Livingston forming its western boundary. The land is high and rolling, well watered and drained by the Ohio on its northern boundaries and the Tradewater on the northeast and the Cumberland river for a considerable distance

on its southern border. Besides numerous streams flowing through the county, principally among which are Cayney Fork, Crooked Creek, emptying into the Ohio on the north, and Piney creek and Long Branch which flow into Tradewater on the northeast and Claylick creek and Livingston creek empties into the Cumberland river on the south. The soil of Crittenden is good and a very noticeable change and in fact a very great change has been going on for the past few years and our farmers, acting under the instructions and the advice of our valued friend Hon. Hubert Vreeland, Commissioner of Agriculture and being very greatly assisted by the numerous speakers that he has sent to our county, our farmers are now paying more attention to fertilizing and the rotation of crops and consequently a large surplus of farm products are shipped out of the county to other markets each year. Corn, wheat, oats, rye, tobacco and hay are the principal staples of the Crittenden county farms, Timothy and Clover being the most profitable of all grasses grown in the county. The farmers are beginning to realize the high value of alfalfa and considerable of it is grown in the county. The high and rolling lands of the county make it most excellent for fruit culture and all fruits grown in Kentucky are grown in this county.

The timber supply of this county is fairly good there being sufficient timber for all farming purposes. The Illinois Central Railroad runs through Crittenden county and it has several passenger and freight stations along its line in our county and thus affords our farmers a most convenient means of transportation for their farm products. The county is very fortunate in having on its border line the water ways of the Cumberland, Tradewater and Ohio rivers, which together with the railroad spoken of affords our county the best possible facilities for transportation. There is quite an improvement being made in our public roads, our county having a general supervisor of roads who together with the several overseers of our county with teams and graders keeps our public roads in first-class condition. Diversified farming is only engaged in for domestic uses, save fruit growing, there being more fruit grown in the county than is sufficient for home consumption. Our county is one of the best mineral counties in the State, coal, spar, zinc and lead being found in numerous places in paying quantities. The educational facilities of the county is confined mostly to the common schools, which are all conducted under the graded school system, they are well attended and under good management.

Marion is the county seat of Crittenden county, situated a little to the southeast of the center of the county on the I. C. Railroad. It is a flourishing town of a population of 2,500. Marion has two large tobacco factories, a laundry, three saw mills, one large flour mill, a graded public school and high school building. More freight is received and shipped from Marion than from any other station on the I. C. Railroad between Evansville and Hopkinsville, Ky.

Crittenden County is situated in the First Congressional, First Appellate, Fourth Judicial, Fourth Senatorial and Seventh Legislative Districts.

CUMBERLAND COUNTY.

(Revised 1907 by the County Attorney.)

This county was formed in 1798, from a part of Green, and named from the Cumberland river which flows diagonally through the county from northeast to southwest. It is bounded on the north by Metcalf and Adair; east by Russell and Clinton, south by the Tennessee state line and Monroe county, and west by Monroe and Metcalf.

The Cumberland river and its tributaries cut through every rock formation, from the upper coal formation until in this county it reaches the cambrian or lower silurian blue limestone.

A small portion of this county lies on the sub-carboniferous lithostrotion limestone, but the greater part of the county is based upon the waverly series which are cut through by the rivers and creeks so as to expose the devonian shales and the upper silurian in thin stratification and the lower silurian blue limestone in the bed of the rivers. There appears to have been much disturbance in these formations, caused probably by a succession of earthquakes at an early period in their formation. There is no coal in the county; but oil in paying quantities has been found by wells sunk in the river and creek bottoms. A few years ago there was quite an extensive oil field in Cumberland county but for some reason it has been abandoned. The Cumberland Pipe Line traverses the southern part of the county from east to west. The first noted "American Oil" well ever bored in the United States is situated three

miles from Burkesville, on the bank of the Cumberland river. The oil was struck while boring for salt water, in 1830, at the depth of one hundred and seventy five feet, and spouted up to a height of fifty feet above the surface. This oil well continued to run for many years, and the product was sold under the name of "American Oil" to be used as a cure for rheumatism, burns, scalds, etc. At that time nothing was known of the lubricating and burning properties of coal oil.

Salt water abounds in this section, and some iron ores. The general surface of the county is broken and hilly and abounds in knobby formations of thin soil, but the bottoms are of great fertility.

There is much excellent building rock in this part of the state, which some day may become valuable.

Cumberland river which is navigable by steamboats the greater part of the year, with its tributaries drain the entire county.

The United States government has begun a series of locks and dams on the river, which will soon be completed up to this point, and which will open up and give an impetus to many new industries. Its principal tributaries are Marrowbone, Crocus, Big Renox, Little Renox, Willis Bear, and Goose creeks. The county abounds in sulphur and chalybeate water. The most noted of these springs are on Renox and Sulphur creeks and possess remarkable health-giving properties.

The greatest wealth of the county lies in its timber. It abounds in the best qualities of oak, poplar and chestnut, besides walnut, cherry, ash, maple, hickory, and many others. The hardwoods of the county are very valuable. They are being shipped to market, both sawed and in rafts of logs. When the series of locks and dams now in course of construction are completed the industry will assume enormous proportions. There are now several companies engaged in getting out staves, ties, and cedar poles, which industries have been found very profitable.

Corn, wheat, oats, rye, and tobacco are the staple crops, and the principal grazing and hay grasses are clover (which is also grown for the seed), rep top timothy orchard grass, blue grass, millet and a limited amount of alfalfa, all of which grows luxuriantly.

Stock peas and sorghum are each grown in large quantities. The land is well adapted to the growth of dark tobacco, and at one time

this county produced more than any other county in the United States. The soil and climate are also adapted to small fruits but their cultivation is as yet very limited.

The farmers pay a good deal of attention to the raising of thoroughbred stock. No prettier horses are to be found in the state. The fattening of cattle for market is a profitable industry, while the abundant mast all over the county affords excellent facilities for fattening hogs, large numbers of which are shipped to Louisville, Cincinnati, and other points commanding the best prices. Poultry and eggs are shipped in immense quantities and bring more money into the county than any two of the other products combined.

Many people during the summer months are engaged in pearling and many pearls of great size and brilliancy have been found.

Burkesville the county seat, is situated on the north side of the Cumberland river, and is the largest shipping point above Nashville, Tenn. It has a good court house, four churches, several stores, one bank, a large roller mill, and many handsome private residences. It is the seat of Alexander College founded in 1872, which is a beautiful building and an endowment of several thousand dollars. There is also an excellent public school building.

Marrowbone is a flourishing town, with three churches, public school building, large roller mill, one bank, and several stores. Bakerton, Peytonsburg, Leslie, Cloyd's Landing, Amandaville, Whetstone, Hegira, and Waterview are wide awake villages.

The Christian, Methodist, Baptist, and Presbyterian are the chief religious denominations. There are many beautiful church buildings located throughout the county. The public schools are in good condition and are within easy reach of every child in the county.

Cumberland county is situated in the Eleventh Congressional, Second Appellate, Twenty-ninth Judicial, Sixteenth Senatorial and Thirty-seventh Legislative Districts.

DAVIESS COUNTY.

(Revised 1907 by Henry S. Berry.)

In the year 1815 a part of Ohio county was cut off and made into a new county which was called Daviess, in honor of that brilliant lawyer, orator and gallant soldier who gave up his life for his country on the bloody field of Tippecanoe, Col. Joseph Hamilton Daviess.

The county contains about 400 square miles. It is situated in the far famed "Penerile" section of the State. It is bounded on the north by the Ohio river, on the south by McLean and Ohio counties, on the west by Green river and Henderson county and on the east by Ohio and Hancock counties. The county has about forty miles of frontage on the Ohio river and twenty-five miles of western boundary on Green river, and is splendidly watered and drained by Yellow, Pup, Blackford, Panther, Delaware and Rhodes creeks.

The county may generally be divided into one-half level, one-fourth rolling and one-fourth hill land. There is practically no land that is not adapted to cultivation. No land that is so low but what it can be drained and none but what can be plowed. There are several varieties of soil from the gray and chocolate loams, with red clay subsoils of the hills, to the gray and black sandy alluvial of the bottom lands. Most of the land in the county is a rich sandy alluvial, very deep and productive land, that is impossible to wear out. You will also find hill land after fifty years of cultivation with only moderate care still producing immense crops. About one-fifth of the land in the county is creek bottom of which there is no richer land in the world.

Before the land of the county was brought under cultivation much of the bottom land was wet, unproductive and considered unhealthy, but under the compulsory ditch law, the low land has been well drained, much tiled and there is to-day no healthier county anywhere. Tobacco, a crop in which Daviess county leads the world, grows magnificently, sometimes 2,500 pounds are grown on an acre. Corn in quantity and quality unsurpassed. Wheat noted for its milling qualities and producing as high as 55 bushels per acre. Timothy, clover and all the grasses and legumes grow

luxuriantly. Potatoes are grown in large quantities and produce immensely per acre. Tomatoes are grown largely for the canning factory. Fruits and vegetables are grown in large quantities both for local and shipping markets. The soil is well adapted to their production. In fact, the soil is well adapted to the production of any kind of crop adapted to this latitude.

While Daviess is famous as the producer of the varied crops it is a producer of tobacco that stands prominent. The various soils producing from the finer grades of Burley to the heavier types of dark export tobacco, by which the county is best known. Owensboro, the county seat, is the largest market for loose tobacco in the world, that is, the tobacco is delivered loose Rhea, Shiloh, Stella, Vancleave, Wetzel.

by the wagon or car load, and is then either stemmed or rehandled and prepared for the various markets of the world. Some forty warehouses employing some 3,000 men, women and children, mainly during the winter season, at which time work is generally scarce find comfortable employment by the fire and at profitable prices for their labor. The Owensboro market not only uses the Daviess county product but draws largely on the counties of Breckinridge, Meade, Hancock, Ohio, McLean, Butler, Webster, Henderson and the Indiana counties bordering on the Ohio river, but draws considerable from the breaks at Louisville.

The original cellulose plant, the largest plant of its kind, is located here. From the pith of the corn stalk, heretofore a waste product, is manufactured into cellulose, for packing behind the armor of warships, also a product for the manufacture of smokeless powder. The farmers have found a ready market for all their cornstalks and at from \$4 to \$12 per acre.

Daviess county is noted for its whisky. Many distilleries are located here engaged in its manufacture. The kind of water and the quality of the corn, two commodities so essential to the manufacture of sour mash, are found and produced in Daviess county.

Four large flouring mills and elevators besides buyers from Louisville, Henderson and Evansville are buyers of wheat on the Owensboro market. We now get Louisville prices for wheat, so keen is the bidding. Besides there is flouring mills at the villages of Powers, Knottsville, Whitesville, Philpot, West Louisville, Delaware, Vanover, Panther, Curdsville and Stanley, villages of from 300 to 1,200 in population.

414 *Seventeenth Biennial Report Bureau of Agriculture.*

The distilleries afford an excellent market for corn. They also afford a good market for hay, timothy, clover, and straw for cattle feeding which is an industry of considerable proportion.

The Ohio river and the three railroads give excellent transportation for all commodities both coming in and going out of the county. Fright rates, thanks to the State Railroad Commissioners, are on a basis with Louisville and Evansville.

The farmers of Daviess county are alive and progressive, and by adopting new implements and methods have brought the yields of the various crops up to the very highest, and have displaced the so-called scrub and in their place are found blooded horses, cattle, hogs, sheep and poultry. The animals shown at our Daviess county fair would attract attention and receive premiums anywhere.

The schools of the county are as good as the best as applies to both houses, equipment and teachers. Our county roads are worked by contract and by men, teams and tools owned by the county and paid for by taxes on property, all under supervision of Road Commissioner. We have over forty miles of gravel and macadam roads and are spending over \$40,000 a year to build more, all of which are free of toll. The tax rate is, at the limit, fifty cents on the dollar, raised for the purpose of building macadamized roads. The sentiment in favor of macadamized roads is very strong in the county. Our dirt roads are in as good a condition as it is possible to make them without the use of metal, but the people are wanting something better. Our bridges over all creeks are of iron. Little or no material for road building is found within the county, but plenty of limestone is to be had from adjoining counties.

Under the new drainage law much land has been drained and brought under cultivation. Land that was not cleared and drained that sold for from \$8 to \$20 per acre twenty-five years ago is now worth from \$80 to \$100 per acre. Land runs in price from \$20 to \$250 per acre. Much of the land is being worked by tenants. Plenty for every one to do that will work for wages of from \$15 to \$25 per month with board.

Coal of an excellent quality is abundant and at from 1 to 5 cents per bushel at mine, of which there are many. The cheap price of coal for manufacturing purposes has induced many manufacturers to locate in Owensboro. Plenty of clay for drain tile and vitrified sewer pipe is abundant; and two large concerns are engaged in their manufacture.

The magnificent forest that once covered the county is fast disappearing, but there is considerable timber left. The counties adjoining still furnish plenty of timber for the various manufacturers.

Owensboro is fast becoming famous as a buggy and wagon manufacturing center. Two large wagon factories, one in operation and the other nearing completion, each with a capacity of 20,000 a year. Five buggy factories with a capacity of 60,000 jobs a year, a forging factory for the manufacture of buggy and wagon iron, a wheel factory, four planing mills, three immense foundries and machine shops, two furniture and chair factories, two large saw mills, stave factory, two manufacturers of electric light supplies, a branch of the American Milling Co., for the manufacture of patent stock food and a collar and harness factory. A shovel and tool factory making enough shovels per month to dig the Panama canal; a glass factory employing 250 hands; an immense tannery using a new method by which not only is the time of tanning reduced three-fourths, but also the yield of leather from 100 lbs. of hide increased 25 per cent over old method without sacrificing quality of leather; an immense factory for the manufacture of church, office and school furniture are some of the many manufacturing enterprises of this enterprising city. The wealth of the city is well divided. No millionaires and a few paupers. Eleven banks furnish plenty of money at liberal rates of interest. The public schools of Owensboro, eight in number, with another being built offer educational facilities unsurpassed. Private schools are abundant. Elegant and commodious churches of the many denominations are abundant in both city and county. Three railroads, the I. C., the L. & N., the L. H. & St. L. and the Ohio and Green rivers furnish abundant transportation to all parts of the country.

Owensboro, the county seat, has a population of 25,000, has ten miles of asphalt and macadamized streets and is the best paved city of her size in the United States. She has her own electric light plant and waterworks. The assessed value of the property in the county and city is \$16,000,000.00, and has over 11,000 legal voters.

Daviess county produced last year tobacco under a greatly reduced acreage and bad season, some 10,000,000 pounds; wheat, 450,000 bushels; corn, 1,000,000 bushels, and hay 20,000 tons.

Daviess county is situated in the Second Congressional, Second Appellate, Sixth Judicial, Eighth Senatorial and Fifteenth and Sixteenth Legislative Districts.

EDMONSON COUNTY.

(Revised 1907 by M. M. Logan and Miss Ora E. Hazelip.)

Edmonson county was formed in the year 1825 from parts of Warren, Grayson and Hart, and was the seventy-ninth county in the order of formation. It was named for Capt. John Edmonds, who was killed in the battle of the River Raisin in 1813. It is bounded by Grayson on the north, by Hart on the east, by Warren on the south and by Butler on the west, and contains 275 square miles.

There is hardly a county in the State that has greater water facilities. Green river flows through the county from east to west and divides the county into equal parts. Both Nolin river and Bear creek flow into Green river from the north and each of them is navigable for several miles. There are a number of large creeks that flow into Green River which are used for the purpose of floating out timber.

The surface of the county is generally broken and hilly, the most valuable farming land being found in the river and creek bottoms. The southern part of the county next to Warren is level as well as the western part of the county joining Grayson and Butler.

The chief source of wealth of the county has been the great quantity of valuable timber which consists of poplar, oak, chestnut, hickory, ash, walnut, sycamore, gum and beech. Owing to this timber's proximity to navigable water it is very valuable, but by far the greater quantity of it has long since been worked into ties and saw logs. It appears that the most valuable timber is all gone, but the timber that had practically no value a few years ago is now worth more than what was considered the valuable timber. There is yet a vast quantity of land covered with timber, chiefly red oak, beech, gum, elm and sycamore. Numerous companies dealing in ties and lumber operate in this county and at all times there can be found any number of their agents. By reason of the extensive business of these companies, the money supply has been abundant for a number of years. The laborer who works in timber earns from \$1.50 to \$2.50 per day. There is now an unusual demand for men to work in timber. Large boundaries of timber are waiting to be made into ties or cut into saw logs.

By reason of the construction of Lock and Dam No. 6 on Green River, navigation has been extended to Mammoth Cave and also up Nolin to Dismal Rock, a distance of about twelve miles. Boats run regularly from Mammoth Cave to Bowling Green and lower Green River, thus furnishing an ideal method of transportation if it were not for the fact that the freight rates are out of all reason.

Capitalists are beginning to turn thier attention towards the mineral resources of this county. Almost the whole of the north side of the county is underlaid with coal and asphalt, and iron is found in abundance. Coal beds have not been developed to any considerable extent, but there is no question about there being coal in almost inexhaustable quantities. Capitalists are gradually buying the coal lands. It would be difficult to find more extensive fields of asphalt than are to be found in Edmonson County, between Nolin river and Bear creek and in the forks of Nolin and Green rivers. Between the two last mentioned rivers is to be found asphalt in liquid form. What are commonly called "tar springs" can be found in various places. At these places the asphalt runs out from the ground and flows for considerable distance. and apparently it is doing an extensive business.

There is one plant in Edmonson county operating an asphalt mine

Farming lands in the county are worth from \$5.00 to \$50.00 per acre; while mineral lands sell from \$3.00 per acre up. There has been a great advance of lands of all kinds within the last few years.

This is not a farming county, but corn is raised in several parts and especially in the rich river bottoms. Farmers have begun to grow wheat and a little tobacco is still grown.

The roads are deplorable. The old fashioned dirt road system is in vogue and the roads have not been worked in fifty years. The people of the county are beginning to talk about better roads and it is very probable that within a short time our county will have a system of roads equal to that of any county in this section of the State.

Brownsville is the county seat and was laid off and established in 1825 by Joseph R. Underwood and Stephen T. Logan. Prior to that time the village had been called Mt. Pleasant. At the present time there are about 500 or 600 inhabitants in the town and it is growing rapidly. It is located on the south bank of Green river and is about the center of the county.

418 *Seventeenth Biennial Report Bureau of Agriculture.*

This county has more natural wonders than any other in the State, the most famous of which is Mammoth Cave. The Colossal Cavern, Grand Avenue Cave and Ganter's Cave are attracting wide attention. The scenery on Green and Nolin rivers is unexcelled and especially is this true of Nolin. The mouth of Balloo Creek on Nolin river is worth traveling hundreds of miles to see and Dismal Rock, Whistling Mountain and the Bluffs of Second creek are other natural wonders on the same river.

Edmonson is located in the Second Appellate, Third Congressional, Eighth Judicial, Eleventh Senatorial, and Twenty-fifth Legislative, districts.

The postoffices in the county are, Brownsville, Mammoth Cave, Proctor's Cave, Chaumont, Elko, Rocky Hill Station, Arthur, Chalybeate, Nick, Cedar Bluff Mills, Chill, Segal, Asphalt, Grassland, Sweeden, Bee Spring, Goff, Sunfish, Nash, Huff, Big Reedy, Ollie, Cade, Stockholm, Straw and Bee. There are two Rural Free Delivery routes that come into this county, R. F. D. No. 2, Oakland, Ky., and R. F. D., Smiths Grove, Ky.

The local option law is in force throughout the county.

ELLIOTT COUNTY.

Formed by the act of the Kentucky Legislature in 1869 and 1870, situated on the head waters of Little Sandy river. Within the county are several water course navigable for floating out lumber, staves, etc. The soil is a deep loam with clay subsoil, well adapted to and on which we grow fine crops of clover, orchard grass, timothy oats and wheat; also excellent corn crops. Cattle are being extensively raised at a good profit to our farmers. We have all the varieties of lumber in this climate; much valuable oak and yellow poplar is now being marketed.

We have bituminous and cannel coal; bituminous coal is from two to four feet thick; cannel coal runs five thick. This deposit is in the southern part of the county. It is thought that we have large deposits of asphalt, as Elliott borders on Carter, near the asphalt mines now being developed at Soldier, Ky.

We have good saw and flouring mills. The public roads are in fair condition with iron bridges across the principal streams, and

the roads are being materially improved. Average price for farm labor is \$13 per month with board, \$18 without board.

We have a splendid corps of teachers in the common schools and two normal training schools, where many are being prepared as teachers.

Sandy Hook is the county seat, beautifully located, well watered and healthful. Newfoundland is a village with two stores, and shops where wagons are built and repaired. In the southeastern part of this county are dikes, and diamonds are supposed to be deposited. Many geologists have visited these dikes, where some mining has been done. Some silver mines with a small per cent. of silver have been found. There is a bright future for Elliott county, when the fine deposits of black and yellow oil on the Middle Fork are developed.

It is in the Tenth Congressional, Seventh Appellate, Twentieth Judicial, Thirty-second Senatorial and One Hundreth Legislative District.

ESTILL COUNTY.

Estill county was established by an act of the Legislature of 1807, and was organized in the year following. It is composed of portions of Madison and Clark counties, and is bounded on the north by Clark and Powell, on the east by Powell and Lee, on the south by Jackson, and on the west by Madison. The Kentucky river washes the shores of the county for approximately fifty miles, and receives within its course numerous tributaries of greater or less extent, of which Station Camp, Miller's creek, Buck and Doe Drowning and Cow creeks are the most important. The banks of the Kentucky and its affluents are thickly wooded with choice timber of both hard and soft varieties, and the river and creeks are utilized during the rainy season of the year for floating millions of feet of choice timbers to the mills. Mill sites of the finest character with water power in abundance dot the river banks on both sides for the entire water front of the county. The soil along the river and creek bottoms is of remarkable fertility and admirably adapted to the cultivation of coarser cereals. Indian corn is raised on these bottoms with great success, the annual inundations furnishing sufficient silt to enrich and rejuvenate the soil for endless successive crops. The

rougher portions of the county are well fitted for sheep grazing, an industry, however, which is yet in its infancy, there being but one sheep ranch in the county. The timber lands of Estill are fast disappearing, the market in that line being yearly stocked with rafts of all kinds of building woods, to be converted into lumber by the mills; also the railroad ties, staves and ranbark. The county receives at the present times much splendid timber for the counties lying farther up the river, and when the river is completely locked and dammed, a work now in progress under the direction of the general government, the facilities for obtaining these supplies will be easily trebled.

No county in the State is richer in its mineral deposits than Estill, although they lie as yet in an almost totally undeveloped state. Immense fields of bituminous coal, miles of iron ore of unsurpassed quality, which lie unused for lack of transportation facilities, zinc in paying quantities, petroleum that shows on the surface its great extent, in one instance bubbling from the ground in a continuous flow so that it can be seen in considerable quantity for a mile on the surface of the stream on which it is located; building stone, scarcely inferior to granite, in inexhaustible deposits, hundreds of acres of workable clays, containing kaolin, aluminum and all the best material for pottery; all these are the known minerals of Estill county, known without any effort made to discover, much less to develop them. There are many mineral springs in the county, all of the varieties of sulphur, alum and chalybeate being represented, in several instances as many as five springs in close contiguity, having no two waters alike. The Estill Springs, situated on the outskirts of the county seat, has been a popular watering place for nearly three-quarters of a century, and is well patronized during the summer season. Irvine has two mammoth saw mills that run as long as the river will furnish them timber; besides scattered through the county are scores or more of mills of less capacity for sawing lumber. There are also four stave factories and one for the manufacture of excelsior. The Louisville and Atlantic, running from Versailles to Irvine, a distance of sixty-one miles, is at present the only railroad tapping Estill county. The road contemplates building in the near future an extension of thirty-nine miles, passing through extensive coal fields and timber lands and terminating at Beattyville. There is a good macadamized road from Irvine to Richmond, and outside of this the system of roads is deficient, being maintained by the surveyor and allotment of hand system.

Irvine, the county seat, is located in the Kentucky river valley, beautified and adorned by the loveliest of nature's scenery and is healthful, the air being pure and salubrious, and the waters noted for their health-restoring properties. It has a population of nearly a thousand, and its people are polite, courteous and to a large extent cultured and refined. It is quite a lumber emporium, quite an amount of capital being invested in that business. Its position on the border between the Bluegrass and the mountains, the purity of its air and water, and many other things, make it one of the best locations for schools of the higher order in the State.

Estill county lies in the Tenth Congressional, Seventh Judicial, Twenty-ninth Senatorial and Seventy-third Legislative Districts.

FAYETTE COUNTY.

Fayette is the central county of the celebrated bluegrass region of Central Kentucky. It is bounded on the north by Scott, on the east by Bourbon and Clark, on the south by Madison and Jessamine, and on the west by Woodford, and includes an area of 275 square miles. As originally constituted by the Legislature of Virginia, it was one of the three counties—Fayette, Lincoln, and Jefferson—composing the district of Kentucky, and was named after the distinguished General LaFayette. It then included "all that part of the said county of Kentucky which lies north of the line, beginning at the mouth of the Kentucky river, and up the same, and its middle fork to the head, thence south to the Washington (now Tenn.) line;" thus including about one-third of the present State. By the cutting off of many other counties, it has dwindled to its present area.

The topography and geology of the country are described in the following paragraphs by Prof. A. M. Miller, of the State College.

Topography.—The surface of the county is rolling upland with the general level of the highest portions about 1,000 feet above sea level. The country becomes more broken towards the Kentucky river, which forms the southern boundary for about fifteen miles, and falls off very abruptly from the brink of the river hills to the 600 contour line. The highest land in the county is on the watershed between North Elkhorn creek and the town branch of South Elk-

horn. The highest railroad level reading is 1,061 feet, on the L. & E. just outside the corporate limits of Lexington, and everything points to this locality as the highest part of the watershed. Probably the 1,100 foot contour line is here reached. The lowest land in the county is, of course, along the river, where opposite the mouth of Tate's creek, low water mark is about 525 feet above the sea. This gives a total range in altitude for the county of nearly 600 feet. Except at Boone's creek and the Kentucky river is reached, most of the land between the Richmond and Winchester pikes is above 1,000 feet. Nearly all of that portion of the county lying west of a line marked by the Russell Cave and Harrodsburg pike is below 1,000 feet in elevation.

Drainage.—All the county drains into the Kentucky river, the southeastern portion by streams that have their courses entirely within or along the borders of the county, the rest of the county by streams that flow outside the limits before emptying. The former are streams of comparatively rapid fall and might furnish some water power, if only they were streams of greater volume. Streams of this class are Boone's, Elk Lick and Raven. The streams of the other class are North Elkhorn, Town Branch of South Elkhorn, South Elkhorn. West Hickman and East Hickman. These are streams of more uniform flow and though the fall per mile is not great, furnish some power for flour and grist mills. None of these streams are navigable.

Geology.—The geology of the county is largely controlled by the topography. In ascending order the formations (all lower silurian) are Chazy, Birdseye, Trenton, Lower Hudson, Middle Hudson.

The Chazy and Birdseye formations, consist chiefly of massive light colored limestone, very compact and breaking with conchoidal fracture, are found only in the river hills north of the Kentucky river fault, a line of fracture which cuts across the bends of the Kentucky river, five times in the stretch from Clay's ferry to Tate's creek ferry. They contribute little to soil formation, but furnish the most valuable building stones in the county. The lower ten feet of the Birdseye is a magnesian limestone of pleasing appearance and possessed of considerable degree of durability. On the two big bends of the Kentucky river to the northwest, these formations appear in picturesque cliffs. On the big bend to the southwest, nothing but the softer limestones and shales of the Upper Trenton, Lower Hudson, and Middle Hudson appear. The Birdseye and

Chazy have here slipped down to below the level of the river, having suffered a total throw of about 300 feet.

The different formations of the county are traversed by fissures which have been filled up by mineral matters, chiefly heavyspar (barite), calcspar (calcite), and fluorspar (fluorite). Minute quantities of lead and zinc accompany these gangue minerals, but thus far these minerals have not been found in such quantities or purity as to warrant their exploitation.

Natural Curiosities.—Numerous caves and sinks, the result of the solvent action of carbonated waters percolating downward, abound in the county. One of the best known is Russell Cave, about seven miles from the town on the Russell Cave Pike. A copious spring—literally an underground stream—issues from one side of the main entrance.

At Elk Lick Falls, a stream formed of springs issuing from the base of the Trenton, has built up quite a deposit of calcareous tufa, reaching from the bottom to the top of the cliff, over which the water falls, a distance of upward of thirty feet.

There are some saline and sulphur wells in the county which are reputed to furnish water of medicinal value.

The greater part of the land of the county is arable and pasture land of the finest quality. The soil is of two principal kinds. That with red subsoil, derived from the Trenton limestone, and that with yellow subsoil, derived from the limestone of the Lower Hudson. The former is considered the better, and may be regarded as the typical bluegrass soil. These soils are very similar, physically, both being rather clayey in texture, though not containing a large proportion of true clay, but being composed largely of very fine sand. They are remarkably rich in phosphates, and contain a large reserve of insoluble potash silicates, so that they are capable of retaining their fertility for a long time under proper tillage, and when depleted, may be restored again by clover or grass. Experiments made at the farm of the Agricultural Experiment Station near Lexington, upon the soil of the second variety described (yellow subsoil), show that when run down by long cropping, it becomes deficient in available potash, though still containing an abundance of available phosphates, and upon such soil fertilizers containing much potash and little or no phosphate may be used with profit. It is believed that this is true also of the better class of soil having the red subsoil. This soil is peculiarly well suited to the white Burley

tobacco and to hemp, but the growing of tobacco has nearly superseded that of hemp in late years. It is also productive of corn, and is fairly good wheat soil. Prof. Milton Whitney, soil expert of the United States Department of Agriculture, in commenting on the mechanical analysis of this soil, characterizes it as "having the same texture as our wheat lands, being in fact rather light for profitable wheat production."

The Timber Growth.—The following extracts from an article by Prof. H. Garman, of the Agricultural Experiment Station, describe the present forest growth:

"Nothing is more destructive to the native vegetation of a country than grazing stock. Forest fires sometimes devastate tracts of land quickly, but in the long run grazing exterminates plants of all sorts more completely. It is not to be expected, therefore, that a county so completely given to stock raising as Fayette should at this late period retain much of the primitive forests with which at one time it was covered. Only in woodland pastures, along fences in cultivated fields, on the steep banks of creeks and Kentucky river can one learn something of what made up the forest when the country was settled. Judging by what remains in these situations, it then furnished as a fine timber in a great variety as any part of the State.

"Taking the county as a whole, there is still considerable marketable timber remaining in the woodland pastures, but it is wisely being preserved for other purposes."

As the raising of fine stock, especially horses, is one of the most important interests in the county, a large part of the best land is retained in permanent bluegrass pastures. Much of this land, however, has recently been devoted to the production of tobacco, which is generally raised by white labor, "on shares." Aside from this, most of the farming is done by colored laborers, and the average price for good labor is about \$14.00 per month with board.

Railroads.—There are in Fayette county about 67 miles of railroad, having mileage as follows: Louisville & Nashville 9.5 miles; Louisville Southern, 8.5 miles; Cincinnati Southern, 14 miles; Kentucky Central, 9 miles; Lexington & Eastern, 12 miles; Chesapeake & Ohio, 11 miles; Lexington Belt line, 3 miles; Lexington & Georgetown Electric Road, 8 miles; Lexington & Paris Electric Road, 9 miles. All railroads center in Lexington.

The territory most remote from railroads in the county is the southeastern part, where some localities are as much as twelve

miles from the nearest railroad station, but are nearer the navigable waters of the Kentucky river

Turnpikes.—The turnpikes around Lexington have been reconstructed during the last four years, and many of them have been put in really first class condition. In the summer of 1899, two "model roads" were built at Kentucky State College. With these as examples, the more important turnpikes leading from Lexington have been improved. Recently a coating of crude petroleum has been tried to lay the dust and prevent wear to some extent. The oil prevents dust entirely.

The county seat and only city of the county is Lexington—a city of the second class, which contains a population of about 35,000, and embraces an area of little more than three square miles, the city limits extending a mile in every direction from the court house.

Lexington is one of the oldest settlements in the State, the site having been visited by a party of hunters in June, 1775, and was named in honor of the battle of Lexington (Mass.) A permanent settlement was effected in April, 1779, and it was incorporated as a town May 6, 1782, and as a city in 1832. The city has had an interesting history, and has long been famous as the home of many men who have occupied high places in the councils of the State and the nation.

Its position at the intersection of several railroad lines extending in all directions, together with its extensive system of splendid turnpikes radiating into every part of the surrounding country, gives it the most commanding commercial position in the eastern half of Kentucky, and has resulted in the development of many important business enterprises, and in the building up of one of the handsomest cities of the State.

The principal streets are paved with brick and creasoted wooden blocks, and internal travel is further facilitated by a very complete electric street railway system which reaches every quarter of the city, with interurban lines to Georgetown and Paris, and several others are projected to other parts. The Street Railway Company also operates the electric light system, and extensive plant for the manufacture of ice.

The water supply of the city comes from Lake Ellerslie, an artificial reservoir covering over 200 acres, two and one-half miles east of the city. It is controlled by a private company, which furnishes the city with its water for fire protection and the homes of the city

426 *Seventeenth Biennial Report Bureau of Agriculture.*

for domestic use. The lake is stocked with a variety of the finest fish by a club composed of business and professional men. Natural gas will soon be introduced, supplied from the fields of Menifee county, and it is expected to be in use by January 1st or sooner.

The business interests of the city are extensive and varied. As a horse market, it has long been famous, and the various racing meetings bring together a large number of horse breeders and owners from all parts of the country.

Tobacco, hemp and canning factories and flour mills convert the raw materials from the surrounding farms into finished products. A large brewery turns out a splendid product, and there are several tobacco warehouses which handle immense quantities of the weed. Many large wholesale and retail commercial houses serve as distributing agents for all kinds of food products and manufactories.

The public buildings of Lexington are large and imposing. The court house was erected at a cost of \$255,000. It is constructed of Bowling Green oolite limestone, is three stories in height, and is very complete in all its appointments; one of the finest in the country.

The government building, in which are located the post-office and the offices of the Seventh Internal Revenue District, is a splendid granite structure, erected in 1889, and is well adapted to its purposes.

The Eastern Kentucky Asylum for the Insane is located upon the northern edge of the city. It has extensive buildings and beautiful grounds of about 250 acres in extent. There are nearly 1,000 of Kentucky's unfortunates cared for here.

Two splendid general hospitals afford a refuge for those stricken down by disease or accident: St. Joseph's, conducted by Catholics, and the Good Samaritan managed jointly by the Protestant churches of the city.

In the early part of the century Transylvania University in Lexington was the most noted institution of learning west of the Alleghanies. It had its beginning toward the close of the preceding century, when grants of public land were made for the purpose of establishing popular education. It was the alma mater of hosts of students, many of whom subsequently became men of great influence and renown. In 1865 it was merged into Kentucky University, and an agricultural and mechanical college was established by the State under the provisions of the grant of lands from the Federal Govern-

ment, as a college of the same institution. In 1878, the Legislature passed an act separating the Agricultural and Mechanical College from Kentucky University and looking to its independent establishment as the Agricultural and Mechanical College by the city of Lexington, and money for the first buildings was given by both city and county.

Kentucky University and the Agricultural and Mechanical or State College, as it is called, are both large and flourishing institutions and provide instruction for both men and women. The former is conducted under the auspices of the Christian church, and in its Bible College, especially, where students meet from all parts of the world, is an important auxiliary of that denomination. Its College of Liberal Arts offers courses in the usual branches of collegiate instruction.

The State College is non-sectarian institution, supported jointly by the State and the Federal governments. While giving instructions in the usual classical studies, it is also especially prepared to give thorough courses in scientific, agricultural and engineering lines, its laboratories and shops being amply equipped with the best modern apparatus for this work. Associated with the college, the Kentucky Agricultural Experiment Station is constantly engaged in experimental work with farm and garden crops in the interest of farmers.

Besides these two institutions, there are four others for the education of young ladies: Sayre Institute. Hamilton College, Campbell-Hagerman College, and St. Catherine's Academy, conducted under the several auspices of the Presbyterian, Christian and Catholic churches. The American Missionary Association also maintains a large normal school for colored pupils. In addition to all these, there are several large commercial colleges, private schools, and, the necessary quota of public schools for the needs of the community.

The principal villages outside of Lexington are East Hickman, Athens, Centerville, Walnut Hill, Fort Spring, Chilesburg, Donerail, South Elkhorn and Sandersville. The State Houses of Reform are located at Greendale, a station on the Cincinnati Southern railroad, a few miles north of Lexington.

Fayette county is situated in the Seventh Congressional, Fifth Appellate, Twenty-second Judicial, Twenty-seventh Senatorial, and Sixty-first and Sixty-second Legislative Districts.

FLEMING COUNTY.

(Revised 1907 by L. N. Hull.)

Fleming county is located in the northeastern section of the State and is in the second tier of counties from the Ohio river. It is an old county, having been formed in 1798 from a portion of Mason county. The surface of the middle and western portions is rolling, and is in the far-famed Blue Grass section, while the eastern portion extends to the foothills of the Cumberland Mountains and is more broken. For those who have only limited means, the eastern section offers exceptional inducements. The lands in that section are yet low in price, but are being rapidly taken up by the small farmer who desires a home of his own. The coves and valleys are fertile, while the uplands grow various kinds of splendid fruit. For those of more means, who desire the advantages and pleasures of living in a richer community, the middle and western sections offer very great inducements. In no county of this or any other State do worth and integrity count for more. We certainly possess a splendid citizenship, and they, at all times, stand for that which goes to upbuild her interests. We have a Prohibition law which prohibits, because public sentiment is behind it. No county is more ably managed in a financial way. We have a good system of turnpikes (better than the counties surrounding us), a low tax rate, and are out of debt. Labor, both skilled and unskilled, is scarce and very high. There is no healthier county in the State and we feel that we live in a favored clime. Licking river skirts the southern boundary, while Fox, Locust, Fleming and Johnson creeks cross the county, assuring us plenty of water at all times and seasons. Flemingsburg, the capital, is a prosperous little city of some two thousand souls, and is noted for the hospitality and culture of its citizens and the beauty of its women. It is the center of a fine agricultural region, that is noted for its fine horses and cattle, and has three banks, seven churches and a graded high school that has quite a reputation at home and abroad. Besides these things, we have railroads and a great many more conveniences that tend to make this an ideal place to locate. So, we have many of the advantages, without the disadvantages, of city

life. Many people come to our little city to educate their children and this is causing it to have a steady and permanent growth. Besides the three prosperous banks in Flemingsburg, we have banks at Ewing, Nepton, Hillsboro, and Sherburne, each doing well and in a thrifty, prosperous villages in the county. Take it all and all, no county offers better inducements to the moral, law-abiding, homeseeker, than does this county, and to all such, we give and extend a hearty welcome.

The county is in the Ninth Congressional, Sixth Appellate, Nineteenth Judicial, Thirty-fifth Senatorial and Eighty-eighth Legislative districts.

FLOYD COUNTY.

Floyd county is situated in the extreme portion of eastern Kentucky. It was made a county in 1799 and its territory was taken from the counties of Mason, Fleming and Montgomery. It was named in honor of Col. John Floyd, a very prominent man in Kentucky in the early days of the State. It has since contributed much of its territory to form other counties, sixteen counties having been formed in whole or part, from the original territory of Floyd. It is bounded on the north by Johnson and Martin counties, on the east by Pike, on the south by Knott, and on the west by Magoffin. The surface of the county is very mountainous, it is well watered and drained by the Big Sandy and its tributaries, which flow through the central portion of the county.

In the valleys of the Big Sandy the soil is fertile, and the principal crop of the county, which is corn, is grown to great perfection; wheat, oats and flax are also cultivated to some extent.

The mountains and hills of the whole county are underlaid with coal, the supply being practically inexhaustible, but want of proper facilities for transporting to market has hindered the development of same very materially. Much of the valuable timber of the county has been cut and rafted out of the county on the Big Sandy, yet there still remains much valuable timber, oak, poplar, hickory, beech, ash and walnut. Large tracts of good timber can be bought at reasonable prices per acre. Diversified farming is not carried on,

Seventeenth Biennial Report Bureau of Agriculture.

this, like most of the mountain counties, confining its principal industries to the minerals and timber of the county. The Big Sandy river is navigable in the winter and spring seasons for small steamers and in summer for push boats. There are no turnpikes in the county.

The public roads of the county are common dirt roads which are maintained and kept up under the road laws of the State by overseers warning out hands, who are subject to road duty to work on them. Under such a system, of course, no roads are ever kept in very good condition. There are no railroads in the county, though the Kentucky Midland has been projected to run through the northern part of the county, entering it at Needmore on the western boundary, running to Prestonburg the county seat, and thence in a southeastern direction into Pike.

The labor mostly employed in the county is furnished by native whites. For farm labor hands can be had at \$10 to \$15 per month and board.

The school facilities of this county are furnished by the common schools, which in a general way, may be said to be in good condition; they are well-attended and under good management.

Prestonburg, the county seat of Floyd county, is situated in the northern part of the county, on the Big Sandy river. It is a nice little village, has a church and school house, besides a few stores and shops.

Floyd county is situated in the Tenth Congressional, Seventh Appellate, Twenty-fourth Judicial, Thirty-third Senatorial and Ninety-seventh Legislative Districts.

FRANKLIN COUNTY.

(Revised 1907 by L. F. Johnson.)

The county of Franklin was created in the year 1794, out of parts of Woodford, Mercer and Shelby, and was named in honor of Benjamin Franklin.

Kentucky county was established December 31, 1776, and in November, 1780, it was divided into three counties, viz., Fayette, Lincoln and Jefferson; these three original counties cornered on the present site of Frankfort. What is now known as North

Frankfort was in Fayette, South Frankfort was in Lincoln and West Frankfort or Bell Point was in Jefferson. Frankfort was established by the Legislature of Virginia, in Fayette county, in the year 1786 and in 1788, the county of Woodford was formed out of a part of Fayette. Frankfort, as the capital of the State, was first in Woodford county. There was a large territory included in the boundary of Franklin, when it was first laid off, the line ran "with the Washington line down Salt river to the mouth of Crooked creek," the line also extended "down the Kentucky river to the mouth thereof, thence up the Ohio to the Scott line," etc. The present boundary of the county includes only about 212 square miles, it is located near the central portion of the State. The Kentucky river runs through the entire county from south to north, a distance of about twenty-three miles. The other streams of importance in the county are Elkhorn, Benson and Glenn's creek, Elkhorn being famed as the finest bass stream in the State.

The soil of the county, generally speaking, is the same as that of the far-famed bluegrass counties, the difference being that the surface is more broken. The soil is a clay loam underlaid with limestone; it is very productive, and is adapted to the growth of nearly all kinds of cereals, and to the best grades of white Burley tobacco; some sections of the county are now growing large quantities and fine qualities of peaches and apples, and recent experiments made by Mr. Hubert Vreeland, Commissioner of Agriculture, show that alfalfa can be grown to great advantage.

The soil belongs to the lower silurian formation. The birdseye limestone of Kentucky river marble is found in large quantities, the surface of which is susceptible of a high state of polish, and it is used extensively for building material. The Kentucky river, the L. & N., the C. & O. and F. & C. R. R. furnish easy communication with all sections of this State. There are about 250 miles of macadam road in the county. The macadam roads are repaired by taxation, \$8,000 a year being set aside for that purpose. The county dirt roads are repaired by the old method of warning in the hands assigned to the road by the County Court. The macadam roads are now in better condition than they have been since free turnpikes were established.

There are several mineral springs, the most famous of which are the "Old Scantland Springs," at the Kentucky Military Institute site, where is now located the sanitarium of Dr. J. Q. A.

Stewart, for treatment of nervous troubles and for children of slow mental development. Lead ore is found in some sections of the county in paying quantities, a large plant costing \$35,000 has been erected at Kissinger; this plant employs about seventy men, and large quantities of lead is being mined. The manufacturing interests of the county are extensive, especially that of whisky and lumber; this is the home of "Old Crow," "Old Taylor," "O. F. C.," "Hermitage" and other brands of the finest whisky made. Lumber is shipped from Frankfort to all sections of the country. This is also the home of the Milam reel, the finest ever made. A large hemp mill employs a large force of hands. The Frankfort Shoe Company and the Frankfort Chair Company are large manufacturing concerns; there is also a broom factory, an ice factory, tobacco factory and other factories of minor importance.

Frankfort's greatest boast is her public schools; in addition to the public schools, there are several private institutions of importance, the chief of which are The Excelsior Institute and the Gorden Academy, both of which are on the F. & V. road, a few miles from Frankfort.

There is also located here the State Colored Normal School, which is doing a great work for the colored people of the State, also the Feeble Minded Institute, one of the State's greatest charities.

The assessed valuation of the property in the county for taxation is about eight million dollars. The total assessed valuation of land is \$2,777,227. About 50 per cent of it is in cultivation. It is only within recent years that horticulture has received much attention; there are not more than eight hundred or a thousand acres now in such cultivation, but the fact that a canning factory has been built here will no doubt greatly improve that industry. The average value of farm land is about \$30 per acre. Farm hands are paid about \$18 per month and board the year round or \$1 per day. The Frankfort glass factory, during last season, worked, on an average, 282 men per day, and they received \$1,099.07 per day for their labor.

Frankfort is the county seat and also the Capital of the State; there have been three permanent Statehouses built, two of which were destroyed by fire; the present one was erected in 1820; it is very much out of date and out of repair. The fourth permanent building is about completed at a cost of \$1,300,000. It is located

on the south side of the river, near the center of about 35 acres of ground. It is built of Bedford stone, with a marble finish on the inside. It is 402 feet long, 98 feet wide, three stories high, with a dome 123 feet above the roof, which makes it 212 feet above the ground.

Some of the finest cattle and the fastest horses in the world have been raised on Franklin county farms, and the same alluvial soil, limestone water and bluegrass which have produced the finest hogs, sheep, cattle and horses have also produced some of the greatest men and the most beautiful and lovely women in all the earth.

A sketch of the county's production without man as the crowning feature would be defective. Franklin county has produced two Judges for the Supreme Court of the United States. Two United States District Judges; three ministers to foreign countries; four of her sons have been Governors of this State and two of them Governors of other States. Seven of her sons have been United States Senators and eight of them in the lower house of Congress. Seven of them have been at the head of departments in the United States Government. Five of them Chief Justice of the State. It has furnished eight Attorney Generals and twelve Secretaries of State. It has furnished four State Auditors, three Treasurers, three Superintendents of Public Instruction, two Librarians, eight high military men and fourteen State Senators. It has furnished a large number of artists, orators and poets; not only the great men of this county, but of the whole State, have been buried in our "Beautiful City of the Dead," and their dust has become a part of the earth upon which the foundation of this city is built. We have sleeping there eight Governors of Kentucky. There is one Vice President, to whose memory there stands a monument which is said, by art critics, to be one of the finest pieces of monumental work on this continent. Daniel Boone and his wife Rebecca, are there, with a modest shaft to mark their last resting place. There lie five United States Senators and more than a hundred other men whose names have gone down in history as the great men of this State and Nation; written upon their tombstones is a history of daring deeds and brilliant achievements which sound more like fiction than reality; there lies our sacred dead entombed; there are the most sacred ashes of Kentucky: the pioneer, the soldier, the statesman, the poet, the artist, all lie

together in silent repose, but they still live in the hearts of their countrymen. Men who have traveled through foreign countries say that the natural scenery about Frankfort is not surpassed in beauty or grandeur by any portion of the world. The Frankfort Cemetery is the most beautiful place imaginable, situated on a high hill overlooking the city of Frankfort, and far above the Kentucky river it commands an unobstructed view of the surrounding scenery, beautiful, grand, sublime; the winding river, the majestic hills and the spires of the classic old town make complete a beautiful picture.

Franklin county is situated in the Seventh Congressional, Fifth Appellate, Fourteenth Judicial, Twentieth Senatorial and Fifty-sixth Legislative Districts.

FULTON COUNTY.

(Revised 1907 by R. T. Tyler.)

Fulton county was created in 1845, taken from Hickman county, is situated in the extreme Southwestern end of the State on the Mississippi River, and contains about 184 square miles. Fulton is bounded as follows: on the west and north by the Mississippi river, on the northeast and east by Hickman county, and on the south by the State of Tennessee. It was named in honor of the celebrated inventor of the steamboat, Robert Fulton.

About one fourth of the area of the county consists of exceedingly rich and fertile alluvial lands of the Mississippi Valley, heretofore subject to the annual overflows of the Mississippi River, but by a system of Government Levees which will be completed before January 1st, 1908, practically all of said territory will be reclaimed from damage by overflow. The remainder of the county is rolling table lands, well watered and drained by numerous creeks, and as fertile as any to be found in the state.

The principal products of the farm being corn, wheat, tobacco, cotton, timothy, stock peas, clover and alfalfa. A large amount of dark tobacco is grown in the eastern end of the county, the annual production of same being about 500,000 pounds. In addition to the

production of the crops above referred to, fruits, melons, vegetables and berries grow to perfection and abundance, and the breeding and growing of stock of all kinds is very profitable.

The bottom lands are chiefly cultivated in cotton, corn and alfalfa, which afford a most abundant yield. The annual production of cotton is at present about 1,250,000 pounds and increasing year by year.

The timber supply of the county remaining is good especially on the bottom lands, about three fourth of which is uncleared yet. Oak, hickory, ash, elm, maple, cypress and gum yet remain in large quantities.

Aside from the Mississippi River none of the streams of the county are navigable except for rafts and small flat boats. There are no turnpikes in the county, the public roads all being county dirt roads kept up under the general road law of the state.

There are no mineral deposits in the county, but in and near the bluffs of the river is to be found a clay that has been tested and found to make excellent fire brick and various kinds of pottery and earthen ware.

There are four lines of railroad now extending through the county: the Nashville, Chattanooga & St. Louis, the Mobile & Ohio, and two lines of the Illinois Central.

The price of our upland farming lands is from \$50.00 to \$75.00 per acre. The bottom lands have heretofore been very cheap, but since the building of levees, have enhanced very rapidly, the uncleared lands now selling from \$10.00 to \$15.00 per acre, the cleared land from \$30.0 to \$40.00. Farm labor which is native white and colored is scarce, and can be had from \$15.00 to \$20.00 per month and board.

Facilities for education are exceptionally good, being furnished by the common schools of the county, which are under good and careful management, and three excellent Graded Schools, one in Hickman in west end of county, one in Fulton in east end of county, one at Cayce the central portion of the county.

Hickman, the county seat, was incorporated in 1834 and then called Mills Point. It was changed in 1837 to Hickman; located about forty miles below the mouth of the Ohio river on the east bank of the Mississippi River. Its population at present is about 3,500 which is rapidly increasing, owing to the recent location of

several large manufacturing plants employing many laborers. There is located in Hickman at present seven manufacturing establishments that employ in the aggregate about 1,500 laborers, that are paid wages from \$1.25 to \$5.00 per day. Transportation facilities both by water and rail are first class. It is a flourishing city, its business enterprises prosperous, with good schools and churches, as handsome a court house as is to be found in the State, and a well managed electric light and water plant.

The city of Fulton is situated on the State line near the eastern end of the county about twenty miles distant from the county seat, with about same population, is also a flourishing and prosperous town with good schools and churches. The two main lines of the Illinois Central Railroad cross in the town of Fulton.

Both Cayce and Jordan on the Mobile & Ohio Railroad, and Alexander on the Illinois Central Railroad are all flourishing villages from which a large amount of stock and produce are shipped.

There are seven postoffices in the county, to-wit: Hickman, Fulton, Cayce, Jordan, Alexander, Lazelle and Mable. There are thirteen rural free delivery routes extending through the county, and a perfect network of rural telephone lines throughout the county.

Fulton county is in the First Congressional, First Appellate Court, First Judicial, First Senatorial and First Legislative Districts.

GALLATIN COUNTY.

(Revised 1907 by D. B. Wallace.)

The county of Gallatin, named after Hon. Albert Gallatin, Secretary of the United States Treasury, during President Jefferson's administration, was organized in 1798, from parts of Shelby and Franklin counties, and was the twenty-third county organized in the State. It was at one time one of the largest counties in the State, but territory has been taken from it at various times for the formation of other counties, until now it is one of the smallest. Owen county was formed from it in 1819; Trimble, in part, in 1836; Carroll took the western half in 1838, forming Carroll county, with Carrollton as the county seat, which originally was Port

Williams, the county seat of Gallatin county. Warsaw, formerly known as Fredericksburg, became the county seat of Gallatin.

Gallatin county has always been a prosperous county, always paying into the State treasury more revenue than it drew out, and being of little expense to the State, owing to the law-respecting citizenship it has within its borders. Many a circuit court passes without the return of a single indictment. The county is situated at the lower end of the "great bend" of the Ohio river, and is about midway between the two great cities of Louisville and Cincinnati. Warsaw, the county seat, being about sixty miles below Cincinnati by water, and forty-five by railroad; eighty miles above Louisville by water and forty-five by rail. The surface of the county is generally hilly, though there is an extensive acreage of river bottom land, above high water mark. It is limestone soil, and is very productive. The county raised in 1906 about two million pounds of Burley tobacco. Corn, live stock, fruit and garden farming are given especial attention. There is a small outcropping of coal and lead in the western part of the county, and a very superior quality of tiling clay is also found. The timber supply has been about exhausted, there being only about 3 per cent of the forests left. The county is well watered by creeks. Eagle creek bounds it on the south and the Ohio river on the north, the river boundary being twenty-one miles. The county is most desirably situated for any kind of business, being close to the city markets where the highest prices prevail, and having the advantage of the lowest freight rates, much of the produce being carried to the markets at not to exceed five cents per hundred weight. Any manufacturing enterprise would do well here, as there is a small tax which, in all, does not aggregate one per cent on the actual values, and at the county seat, Warsaw, there has not been a cent for municipal tax paid in fifteen years, yet it has a population of over 1,100, with several furniture factories, and all the reasonable conveniences, such as a first-class fire department, good sidewalks and streets well lighted at night. The expenses are paid out of liquor licenses, from three hotel saloons, and the wharf privileges. Warsaw has a good Commercial Club.

The county has an excellent class of citizens, and has a population of about 6,000. The land will raise any kind of crop suitable to the climate. The land ranges in value from \$5.00 to \$80.00. Farm labor is both white and colored; price, from \$12.00 to \$20.00

per month with board, and from \$18.00 to \$30.00 without board.

Roads are under management of county road superintendent, and are kept up by taxation. It is satisfactory. There are seventy-one miles of free turnpike and ninety-four miles of dirt road, all kept up by a system of taxation. The county debt is only about \$12,000.

Tax rate for county purposes is sixty cents, divided as follows: Twenty-five cents for road and bridge purposes, twelve cents for interest and liquidation of bonds and twenty-three cents for county orders. State tax, fifty cents. Poll tax, \$1.50. Total property tax, \$1.10 per one hundred dollars valuation.

The county is well supplied with good schools and churches and the laws are faithfully executed. The people encourage the incoming of every good citizen, and are willing to assist every industrial enterprise.

Gallatin county is situated in the Sixth Congressional, Fifth Appellate, Fifteenth Judicial, Twenty-third Senatorial and Fifty-third Legislative Districts.

GARRARD COUNTY.

(Revised 1907 by Wm. Herndon.)

Garrard county was formed in 1796 out of the counties of Madison, Lincoln and Mercer, and was named in honor of James Garrard, who was then Governor of the State of Kentucky. It is centrally located, its capital, Lancaster, being within three miles of the geographical center of the State. Jessamine county, from which it is separated by the Kentucky river, bounds it on the north; Madison county on the east; Lincoln and Rockcastle counties on the south, and Boyle and Mercer counties on the west. It is, therefore, a "bluegrass" county. Part of the county is hilly, much of it undulating—what is called rolling land. The soil is highly productive of corn and the small grains, tobacco and hemp.

The "Buckeye" section of the county is hilly and has been cultivated in grain for near a hundred years, and seems to have lost little if any of its original fine productive qualities. Perhaps the best and fattest hogs in this county, and as fine as those

of any county, are driven up out of "Buckeye" for shipment in the fall. We have no minerals, gas or oil, in paying quantities, in the county. The timber, for any but fuel and fencing purposes, is about exhausted. There is some oak timber in some sections of the county suited for milling purposes. Our farming is diversified only in the usual way by rotation of crops, and there is no dairying or truck farming and very little fruit growing carried on as a specialty in the county. We have 140 miles of turnpike road in the county, all of which can now be traveled free of toll. With a rate of taxation for their maintenance of about twenty-five cents on the hundred dollars' worth of property. The other public roads of the county belong to the general statutory system of roads and are well kept. The Louisville & Nashville railroad, "Kentucky Central Division," crosses the county, covering a distance of fourteen miles. There are no uncompleted railroads in the county, and none at present proposed. Dripping Springs is the only health resort in the county. The water is sulphur and magnesia, and is very fine for stomach, kidney and liver troubles. There is a sulphur well at Lowell and another at Cartersville, and either could be made a place of health resort.

The average price of farm lands, improved and unimproved, is about \$25.00. The labor employed is native and the average price per month is \$15, and hard to get.

The county seat is Lancaster, with a population of 1,800, laid off in a perfect square, extending one-half mile in each direction from the center of the public square. It is a fifth class city. The business houses are nearly all new and modern in their architecture, beautiful in design, and are large and comfortable. Many of the residences are handsome, commodious and elegant in design and finish, and few cities have more shade trees which are properly located for shading the houses and streets in the heated term. The public schools of the county are in good condition, with wide-awake teachers, trustees and county superintendent. They are not to any great extent supplemented by local taxation. We have a bonded indebtedness of \$30,000 for county and \$24,000 for the city, and the rate of taxation for county purposes including the turnpike tax will be about fifty cents on the one hundred dollars' worth of property, for city seventy-five cents.

In 1903 Lancaster completed its water works system, the supply being furnished by an artificial lake one and one-fourth miles

from the city. The water is clear, pure and wholesome with plenty for all purposes, through all of the severe drouths during several of the years since the completion of the works.

We have six churches and a fine graded school in the city.

Hon. Louis Y. Leavell, a prominent member of the Legislature at its "Long Session," died in July of the present year, leaving to the graded schools an endowment fund of about \$50,000. The income on this fund with district taxation supplemented by state aid will make this perhaps the finest graded school in the State.

Garrard county is in the Eighth Congressional, Fifth Appellate, Thirteenth Judicial, Eighteenth Senatorial and Sixty-seventh Legislative Districts.

Post-offices in the county are Lancaster, Bryantsville, Buena Vista, Cartersville, Buckeye, Flat Woods, Hammock, Judson, Marcellus, Marksburg, Nina, Stone, Teatersville, McCreary, Hyattsville, Paint Lick, Lowell, Bourne, and rural routes, taking in the residences and business houses in a large part of the county.

Lancaster has recently constructed a laundry and a creamery, both doing well. An up-to-date large, and commodious hotel is being built by local enterprise. A planing mill, canning factory and stave works would do well in Garrard county.

GRANT COUNTY.

Grant county was created a county of the Commonwealth of Kentucky on the 12th day of February, 1820. It was created from a part of Pendleton, and contained all of the territory now embraced within its boundaries, excepting a small strip added from Campbell county in 1830, and a larger strip secured from Harrison county in 1833, and a small cut-off from Boone in 1868, and a very considerable piece attached from Owen county in 1876. Grant county was the sixty-seventh county formed in the State.

At the time of the organization of the county more than eighty-five years ago, the territory embraced within its limits was almost a trackless forest. Its hills and valleys were covered with as fine a growth of hard wood timber as ever invited the woodman's

axe. Game of all varieties abounded. Its people were few and scattered, living in log cabins and leading an easy and thriftless existence. The land was practically valueless, measured by the prices then asked and accepted for it. Yet Grant county, even in the beginning, was a beautiful spot, her people, though few and poor, were honest and loyal to the flag and suffered untold hardships and dangers that their posterity might reap the harvest of riches and good government these pioneers had sown.

The forests of eighty-five years ago have been swept away before the onrolling tide of civilization. Where the hunter set his traps beautiful homes have been built, and a thrifty, provident and honest people have transformed Nature's wilderness into one of the most lovely agricultural communities in the State. Grant county is twenty miles east and west by eighteen miles north and south, and lies on both sides of the Dry Ridge, which extends in an unbroken upheaval from the Ohio river to the Kentucky. The country is broken upland, with a deep rich soil on a foundation of yellow clay, and that in turn underlaid with an inexhaustible supply of limestone. Nearly all of the county is in the highest state of cultivation.

Corn, wheat, rye, oats, potatoes and white burley tobacco are the chief crops cultivated. The tobacco crop varies from three to five million pounds annually, and the quality grown in the hills can hardly be equalled in the white burley belt.

Grant county is pre-eminently a stock raising county. There are thousands of acres of bluegrass scattered from one end of the county to the other, and timothy, clover and all other grasses do remarkably well on our soil. The stock raised in Grant county are fine cattle, sheep, horses, mules and hogs. Of each of these the county produces quite a surplus, and from one year's end to the other, there is a constant shipment out of the county of live stock.

During recent years the county has been greatly improved by better methods of farming, and the agricultural population have increased their wealth until most of the farmers of the county are well to do.

In every part of the county are to be found lovely homes, magnificent barns and all of the conveniences that go to make country life the best life on earth to live.

No county in the State has a better system of turnpike roads.

The mileage is a little under five hundred miles, and it all belongs to and is kept up by the county out of its treasury. The roads were made free about eight years ago and are now second to none in the State. Every neighborhood and nearly every home in the county is reached by a good turnpike road.

The county has thirty miles of railroad. The Cincinnati, New Orleans & Texas Pacific passes along the Dry Ridge for more than twenty miles within the limits of the county. This is one of the best roads in the South and has few equals in any State. The Louisville & Nashville passes through the northern part of the county for a distance of approximately nine miles, and has a perfect road bed and fine equipment.

Grant county has no navigable streams. Its creeks are Big Eagle, Grassy Run, Clark's creek, Arnold's creek, Ten Mile, Fork Lick, Grassy creek and Crooked creek.

Our schools are improving from year to year and are now second to those in no county in the State. At Williamstown, Dry Ridge, Corinth and Crittenden there are free graded schools, and in every neighborhood of the county a good public school, presided over by a competent teacher.

Williamstown is the county seat of the county. It was founded prior to 1820, and is a beautiful little city, situated in the center of the county on the Cincinnati, New Orleans & Texas Pacific railroad, and the Covington and Lexington turnpike.

The other towns of the county are Dry Ridge, Stewartsville, Downingsville, Jonesville, Holbrook, Lawrenceville, Keefer, Corinth, Mason, Blanchett, Cordova, Crittenden, Sherman, Mount Zion, Zion Station, Elliston, Folsom, New Eagle Mills, Hanks and Heekin.

Within the county there are more than sixty church organizations with that many places of public worship. The Baptist is the leading denomination with the Methodist Episcopal Church South, Christian or Church of Christ, Presbyterians, North and South, and Catholic next in order.

The annual tax rate for county purposes is 65 cents, apportioned as follows: For free turnpike fund, 25 cents; general expense fund, 15 cents; turnpike sinking fund, 15 cents; bridge fund, 5 cents, and pauper fund, 5 cents.

There are about 3,300 voters in the county and our citizens pay taxes on a total valuation of a little over \$3,500,000.

Grant county is in the Sixth Congressional, Fifteenth Judicial, Twenty-sixth Senatorial and Twenty-seventh Legislative districts.

GRAVES COUNTY.

(Revised 1907 by Hon. T. J. Elmore.)

Graves county was organized in 1824, so called for Maj. Benjamin Graves, who was a native of Virginia, and emigrated to Kentucky when very young. Ervin Anderson was the first white child born in the county, in 1820. First sheriff was Elijah Cravens; first County Judge was S. F. Morse.

This county is the hub of Jackson's Purchase and one of the leading counties of this end of the State, being the only county in the State having a perfect shape, and embraces an arear of 540 square miles. This is strictly an agricultural county, producing every variety of farm products known to the agricultural channel. The greatest revenu crop produced is tobacco, having produced as high as 22,000,000 lbs. in one year. The highest prices of this year, is leaf \$12.00 to \$16.00, lugs \$4.00 to \$6.00. These prices are fast enriching our farmers, giving vitality to every branch of trade, and sending real estate upward to an astonishing degree. Graves is not marked by any topographical features, the general surface being slightly undulated with a few hills in the northern and southern portions. The forest consists of the different varieties of oak, poplar, gum, ash, hickory and sassafras.

There are several pits of potters tile clay in the county, which are being worked with much profit to the owners, vast quantities of this clay being shipped to the east for the manufacturing of iron-stone, china, and fancy china tiling. The county has several creeks running through it in different directions, which furnish stock water in abundance; we have no trouble about cisterns, the earth holding water almost like a jug; the mother earth can be plastered without bricking. All kinds of fruit and berries do well in this county. We have quite a number of towns distributed over

444 *Seventeenth Biennial Report Bureau of Agriculture.*

the county; viz: Mayfield, Boaz, Hickory, Lowes, Fancy Farm, Dublin, Wingo, Water Valley, Lynnville, Cuba, Farmington, Dukedom, and others. Some of these towns possess fine graded schools and some have banks. The capital of Graves is Mayfield, situated a little north of the geographical center and the largest city in the purchase save Paducah. Its history is coeval with that of the county as the act of 1821 fixing the boundaries, designated Mayfield as the seat of justice; although no survey of the place was made until after the county was organized in 1824. The city did not develop until the completion of the Memphis, N. O. & Northern R. R. (now known as the I. C. R. R.) This gave new life to the town, and since that time its development has been substantial and satisfactory in every respect; new interests have been developed, manufactories have been established, and the general business has increased to such an extent that Mayfield is now recognized as the commercial center of the largest and most fertile agricultural region of western Kentucky.

The population according to the census of 1907, is 6,600. The commercial interests of the city are represented by nine dry goods stores, six groceries, five drug stores, five confectionaries, four hardware, two book stores, three newspapers (two dailies), three queensware stores, four agricultural warehouses, three jewelry stores, three saddlery and leather stores, besides several stores where general merchandise is handled. There are five hotels, five livery stables, two large flouring mills, one marble yard, three furniture stores, four buggy stores, twelve blacksmith shops, six barber shops, and the largest loose tobacco market in the world. The manufacturing enterprises consist of the Mayfield Woolen Mills, employing 400 hands; the Merritt Pants Co., employing 300 hands; the May Pants Co., employing 200 hands. These enterprises are under fine management and are yielding good dividends. We have two large planing mills, an ice factory, Pegram Tobacco Works, The Mayfield Manufacturing Co., The Mayfield Iron Works, two steam laundries, six coal dealers, and ten banks, five in the city and five in the county, all of which are doing a fine business. We have five large brick churches for the whites and two for colored people.

Our school system cannot be surpassed in western Kentucky. The West Kentucky College is a large two-story brick building, beautifully situated in the southern portion of the city, with the

necessary apparatus for demonstrating all sciences taught in the college. We have four commodious buildings for public schools; there are in the county 109 school districts for white and 18 for colored children, and 11,159 children that attend these schools.

Mayfield has quite a number of professional men, 35 attorneys at law and 15 doctors. This city is located on the highest point between Paducah and New Orleans and is quite healthy and moral. We have had no legalized saloons for thirty-one years. Our people are enterprising, social and industrious, and we respectfully invite emigration to our city and county.

GRAYSON COUNTY.

(Revised 1907 by H. W. Stoy, County Attorney.)

Ohio and Hardin counties contributed territory to form Grayson in 1810. It was the fifty-fourth county organized in the State and was named for Colonel William Grayson, of Virginia. Rough river on the north and Nolin river on the southeast, and Bear creek through the south-central part of the county (all tributaries of Green river) afford facilities for cheaply transporting the vast quantities of oak, poplar, ash and walnut timber which are annually shipped from the county in the form of saw logs while the Illinois Central railroad, running through the center of the county from northwest to southwest, yearly hauls from the county large quantities of staves, lumber and railroad ties. The county has but a small quantity of coal and is undeveloped. There are some excellent clays in the county, but only one or two banks have been worked. The soil is generally light and the face of the county broken. Gas was struck at Leitchfield, but not in sufficient quantities for domestic or commercial uses. Corn, wheat, oats, hay and tobacco are the principal crops. Tobacco has not been extensively grown for the last few years. Of the other crops very little is exported from the county. Commercial fertilizers are used extensively and with good results. Young orchards are being set and domestic canning for home use is general among householders. Truck and dairy farming are neglected.

A railroad from Leitchfield or Clarkson, through the southern part of the county to Bowling Green, in Warren county, has been under consideration for a few years, and it is hoped will be built in the near future. The Grayson Springs, four miles from Leitchfield, are celebrated for the medicinal properties of their waters. Their situation is picturesque and the scenery grand. Splendid hotel buildings have been provided, together with modern facilities for entertaining guests, providing for their pleasure, comfort and health. Farm lands are generally cheap, both for improved and unimproved. Along the streams are bottom lands as fertile as any in the State. Common labor, including board and lodging, is paid from \$10 to \$15 a month, while day laborers, boarding themselves, usually get a dollar a day. There are no vegetable or fruit canneries and one creamery and cheese factory in the county.

Leitchfield, the county seat and principal town, has a population of about 1,200. It was named in honor of Major David Leitch, who donated the site for the town. The town is well drained and healthful, and has a graded school. We have a splendid public school building with five recitation rooms and an auditorium. The old court house was burned by the Confederates during the war, and the one erected in its place was burned in 1896, with nearly all the records of the county. A new and handsome modern structure succeeds the destroyed building. It is provided with fireproof clerk's offices. The town is not provided with water works or a system of lighting, but a few of the citizens have provided themselves with a water supply by erecting a tank into which the water is pumped by a windmill. It is doubtful if there is a town in the State of its size that does a larger mercantile business than Leitchfield. In 1886 the first bank was established in the town and county. Since then, two more have been organized at Leitchfield, one at Caneyville, one at Clarkson, one at Falls of Rough and one at Big Clifty.

The town has one hotel besides boarding houses. There are two drug stores, two hardware and furniture stores, two clothing and hat stores, four general stores, two groceries, besides millinery stores, notion stores and lunch stands, it has a Masonic and Odd Fellows' Hall and excellent flouring mill. By a special act no liquor is sold in the town. The town is improving.

Few counties have more successful public schools. The teachers are equal to those of any county of the State, and the methods are

Seventeenth Biennial Report Bureau of Agriculture. 447

not surpassed by any. The enrollment compares favorably with other counties, and the results surpass the general average. Grayson county furnishes many teachers to other counties, and many business men to Louisville and other cities.

Leitchfield has one of the largest department stores in the country, the Leitchfield Mercantile Co., the Leitchfield Clothing Co., which employs 75 or 100 hands the whole year, an ice plant that furnishes ice to Leitchfield and neighboring towns; a steam laundry and the Bell Telephone Co. (long distance) has an exchange here. The railroad debt of \$200,000 has been paid and though seven iron bridges have been built in the last four years at a net cost of \$15,000, the county owes only \$5,000 or \$6,000.

For the last six years the roads in Grayson county have been worked by taxation. A grader has been purchased for each magisterial district and the fiscal court is now contemplating purchasing a number of rock crushers. The good road spirit has taken quite a hold on the people and the next few years will see a vast improvement in its roads.

The most extensive and valuable deposits of asphalt in the State are to be found in Grayson county. There are at least three horizons of asphalt in the county. First, in the lower or Big Clifty sand. Second, in the second sand of the Leitchfield flagging, as shown on Beaver Dam creek and third, in the carboniferous sands at intervals over almost all the southern half of the county.

A new brick hall with offices underneath has been erected in Leitchfield, by the Masons and Odd Fellows, during the past summer.

There are three banks in town, the Leitchfield Deposit. The Grayson County National and Farmers and Merchants.

Since the railroad bonded debt was finally paid off, three years ago, the farming lands in many portions of the county have nearly doubled in value. Spirituous liquors are not sold by retail any place in the county.

The tax rate for county purposes is fifty cents on each \$100 of taxable property. Pounds of tobacco raised last year, 831,470.

Grayson county is situated in the Fourth Congressional, Second Appellate, Ninth Judicial, Twelfth Senatorial and Twenty-seventh Legislative Districts.

Green County.

(Revised 1907 by T. B. Marshall.)

Green county was formed in 1792, and contained at that time an area of about 3,000 square miles. The territory that is now embraced in the counties of Taylor, Adair, Metcalf, Cumberland, Monroe, Clinton and Russell and parts of the counties of Hart, Barren, Pulaski, and Wayne was in 1792 a part of Green county. The county now contains only 275 square miles. It is situated in the south central part of the State, is bounded by the counties of Larue, Taylor, Adair, Metcalf and Hart. The surface is undulating.

The extreme northern portion of the county is hilly and undeveloped but good grazing land. Green county is one of the best watered counties in the State, having many small streams and branches that are fed by overflowing springs whose pure, sparkling waters are known and sought far and near.

Green river runs through the county from east to west, dividing it into two nearly equal parts. The cliffs along Green river are very high and afford much beautiful scenery. They usually occur only on one side of the river at the same place. When the cliff is on the north side of the river, good bottom land will be found on the south side opposite the cliff, and vice versa. In the southeastern part of the county is Caney Fork, which runs into Big Russell creek, ten miles from Greensburg. Big Russell creek enters Green county from Adair county and empties into Green river near Greensburg. Other streams on the south side of Green river are Greasy creek, Tramel's creek and Little Barren river, which cuts a narrow strip off the southwestern part of the county, then forms the line between Green and Hart for about four miles. The northern part of the county is watered by Big Brush creek with its north and south prongs. Little Brush creek and Pitman creek, Meadow creek. Also, a very small stream in the eastern part of the county, but on which are some of the best and most beautiful farms in Green county. Plenty of fish may be found in Green river, Little Barren, Big Russell creek, Big Brush creek and Pitman creek. The valley lands in Green county and the creek and river bottom farms are very fer-

tile, there are also many very beautiful and fertile upland farms, that are well improved and up-to-date, and on the farms in a days' journey one may see many herds of splendid cattle, hogs and mules. The local horse and mule market at Greensburg is well attended, and many good animals are bought and sold. There are several firms in the county that are always ready to buy the farmers' cattle, hogs or mules and an average of from two to four car loads of live stock are shipped weekly.

There is a large poultry farm at Greensburg that buys poultry of all kinds, eggs and wild game, and pays the highest market price, and by this means \$300.00 to \$400.00 is distributed weekly among the thrifty house-wives.

The soil is based on limestone and red clay and is quite well adapted to the production of corn, wheat, oats, rye, clover, millet, blue grass and sugar cane. It is also well adapted to the growth of a variety of vegetables, such as Irish potatoes, sweet potatoes, tomatoes, beans, peas, cabbage, mustard, lettuce, beets, parsnips, onions, and turnips. The corn crop of 1907 was enormous, producing from ten to twelve barrels per acre, while the wheat crop for the same year was very fair.

The county a few years ago was well supplied with walnut and poplar timber, but nearly all of that has been sawed and shipped out of the county, but there is still a considerable quantity of beech, oak and hickory which is also being put on the market in the form of boards, staves and spokes. There is an abundance of good building stone in this county, the principal quarry being just outside the town limits of Greensburg on the river cliff. Large quantities of good gray limestone have been taken from it, and all the houses recently built, whether frame or brick, have their foundations laid from this quarry. The old historic court house was built in 1802 from stone quarried there, also the jail, and in 1889 Mr. John G. Barrett, of Louisville, erected a \$10,000 Presbyterian church in Greensburg of stone taken from the local quarry.

There has been nothing done for some time in the way of developing the minerals of the county.

Among the natural curiosities of Green county may be mentioned what is called the Narrows of Pitman. About two miles from Greensburg, Pitman creek makes a bend bearing to the right, running about three miles and circling back to within a few yards of

the place where the circle begins, thus forming a very narrow peninsula, hence the name, Narrows of Pitman. At this point where the creek completes the circle, is a grist mill and a channel is cut through the peninsula. From the mill dam across the peninsula to the mill is about twenty yards, but if you will follow the stream, you will find that the mill dam is about three miles above the mill. In the western part of the county about two miles from the mouth of Little Barren river is a large cave about three hundred yards in length through which flows a small stream of water. The outlet of this cave is on the cliff of Little Barren river. The entrance to it is rough, but after having once descended to the bottom of the cave, the explorer if he is well supplied with torches, may easily pass through the cave, provided he does not arouse the millions of bats that slumber there.

There are eight roller mills in Green county. These are well distributed over the county and there are also two grist mills with fifteen saw mills, all of which do a considerable business. There are about six miles of railroad in this county. There is plenty of rock and gravel to turnpike and gravel every public road in Green county. The roads are worked under the State law and are usually not good. However, there is an effort on foot to make some pikes through the county. There are but few hired laborers in this county; those that work for wages are natives and work mainly on the farm.

The educational advantages of this county are reasonably good. The school houses are usually good and many are supplied with modern apparatus. There are 62 white common school districts, with an attendance of 3,347 white children, also 13 colored districts with an attendance of 606 colored children.

The religious denominations that have permanent organizations and regular worship in the county are Baptist, Methodist, Cumberland Presbyterians and Presbyterians. The Baptist have 25 churches; Methodists 11; Cumberland Presbyterians 4 and Presbyterians 2. Also two Y. M. C. A. organizations.

Greensburg is the county seat, the most important and populous town in the county. It is situated on Green river, near the center of the county, and has a population of about twelve hundred. It has very good streets and many wells that furnish abundance of excellent water. Several of the wells recently bored have as good sulphur water as can be found in any part of the State. The town has

five churches, two Baptist, one white, one colored, two Methodists, one white, one colored, and one Presbyterian. They are all handsome structures, and stand as monuments to the enterprise of the people, who live here. The public school building, built in 1894, is a handsome two story building, equipped with globes, maps, and charts, and is the property of the public school district. The building cost about \$3,000 and since its completion in 1894, an academy, or high school has been taught in the building in connection with the public school, and many of the most successful teachers and business men of Green county have received their training at the Greensburg Academy.

There are two banks in town doing a large business which is evidence of the wealth of Greensburg and Green county.

The merchants at this place do a profitable business and the town has for many years been a great timber market. Other good business places are Summersville, which contains a bank, several stores, two churches, and Haskinsville, Gresham, Thurlow, Pierce, Osceola and Ene.

Green county is in the Fourth Congressional District. Hon. Ben Johnson, Congressman, the 11th Judicial District. Hon. I. H. Thurman, Judge, 13th Senatorial District. S. T. Gorin, Senator, and the 38th Legislative with J. M. Mitchell, Representative.

GREENUP COUNTY.

Greenup county is situated in the extreme northern part of the State, and is bounded on the north by the Ohio river, on the east by Boyd county, on the south by Carter and on the west by Lewis county. It was made a county in the year 1803 and named in honor of Gov. Christopher Greenup. It is well watered and drained by Tygart's creek Little Sandy river and their tributaries, which empty into the Ohio river. The soil of Greenup county is good, particularly the river bottoms. The wide bottoms adjacent to the Ohio river and the magnificent bottom lands in the valleys of Tygart's creek and the Little Sandy river furnish the most desirable farming lands, and are fertile and strong, producing in great abundance. There are good veins of both cannel and bituminous coals found in the county,

and also iron and the very best quality of fire clay. In this county is offered the best inducement to establish works for making fire brick. Only about one-eighth of the county is covered with timber, though much valuable timber is yet to be had. White oak predominates; pine, beech and other woods are plentiful. Diversified farming is engaged in only for domestic uses, but this is a good county for fruit culture, and much attention is beginning to be paid to that industry. Fruits of all kinds and berries do well in this county.

The Ohio river forming the northern boundary of the county for about thirty-five miles, is the only navigable water course accessible to the county. The little Sandy river and Tygart's creek are navigable only for flat boats and rafts. The Little Sandy, however, could easily be made navigable, and cheaply so, for some twenty-five or thirty miles above the Ohio by a system of locks and dams.

Greenup county has no turnpike roads, the public or county roads are all the common dirt roads and are kept up by the county court under the road laws of the State, and are kept in very good repair. There are about fifty-three miles of completed and operated railroads in the county, the Chesapeake & Ohio and the Eastern Kentucky railroads, giving us railroads traversing the county from east to west and from north to south, which, with our river border, give us unexcelled facilities for transportation, both for travel and for shipping our surplus products to market. The staples of the Greenup county farm are corn, wheat, oats, hay and tobacco. The hill or uplands produce the finest pastures, and the hillsides also grow Burley tobacco. Stock raising is largely engaged in, and sheep raising is particularly an important industry with the farmers of this county. The labor of the county is very generally performed by the native whites, who can be employed for \$10 to \$15 per month and board.

Lands with or without timber on them can be purchased in large or small tracts to suit the purchaser at prices ranging from \$2 to \$10 per acre. The schools of the county are such as the common school system provides, and are in a flourishing condition. Good school houses may be seen in the different districts, and they are provided with the modern appliances for teaching, and in the main are provided with good and competent teachers. The schools are well attended. The county has a number of good church build-

ings with flourishing congregations. All in all, Greenup is a good county to live in. It has a population of about 12,000.

Greenup is the county seat of Greenup county, situated in the northeastern part of the county, on the Ohio river, and the Chesapeake & Ohio railroad. It is a nice flourishing town, with a population now estimated to be about 1,000. It has a good trade, enterprising merchants, good hotels, good citizens, churches and school-houses.

Greenup county is in the Ninth Congressional, Sixth Appellate, Nineteenth Judicial, Thirty-second Senatorial and Ninety-ninth Legislative Districts.

HANCOCK COUNTY.

Hancock county was organized in 1829, and named in honor of John Hancock. It is in the northwestern part of the State, on the Ohio river, and has an area of about 200 square miles or nearly so. Its northern boundary is the Ohio river, distance of twenty-five to thirty miles, with Breckinridge county on the east, Ohio county on the south and Daviess on the west. The county is drained by Indian and Sandy creeks and its tributaries in the eastern portion, and Blackford creek and its tributaries in the southern and western sections.

The bottom lands adjacent to the Ohio river are very rich and productive. These bottoms and creek bottoms comprise about one-third of the area of the county, and make most desirable farms. These bottoms are of fine, rich, sandy soil; the hills or rolling lands are composed of clay soils. Nearly all of the county is underlaid with bituminous coal, and the well-known Falcon and Hawes coal is found in the western part of the county, and the famous cannell coal mines are situated in the eastern portion. Potters' and fire clay are found underlying the coal and elsewhere in the county in great abundance. Some of the finest red sandstone in the world is found in this county. Graphite and other minerals are known to exist, but have not been developed. Gas and oil are both known to abound in the county, but neither has yet been developed. The supply of timber is well nigh exhausted, but there can yet be found nearly all the varieties indigenous to this latitude, though in limited quantity. But little attention, thus far, has been paid to di-

versified farming, though there is sentiment of steady growth among our farmers to extend their operations in that direction.

There are no navigable streams within the county, the Ohio river, on its northern boundary, furnishing the only water transportation, which, as stated above, covers a distance of about thirty miles.

There are no turnpikes in the county, the public roads being such as are known as dirt roads, and are under the supervision of road surveyors, appointed by the county court. The roads are kept up by the county court, the overseers or surveyors "calling out" to work on same such citizens as are liable, under the laws of the State, to do road duty. The Louisville, St. Louis & Texas Railroad runs through the county with its northern boundary, and nearly parallel with the Ohio river, and not very far as a general thing from it, making some eighteen miles of road, which is the only railroad in the county, and there is none other in prospect.

The Barker Springs, situated in this county, are quite popular as a health resort; there are also two other mineral springs near Patesville in the eastern part of the county, of real merit, which are worthy of special notice and capable of being converted into successful health resorts. The natural scenery of the county is without special features, save Jeffry Cliffs, in the eastern portion, which take on all the grandeur of a natural curiosity.

The price of land meets the two extremes, ranging from \$2 to \$60 per acre; about \$20 for improved and \$12 for unimproved farm lands, however, is a fair average price in the county, the average taxable value being about \$9 per acre. The labor employed is mostly native white and colored hands for which a good price is paid, averaging \$18 per month.

Educational facilities are furnished alone by the common schools of the county, the school fund in some instances being supplemented by local taxation. The schools are well conducted and very well attended. The county has no bonded debt; the rate of taxation for county purposes is forty-three cents on the one hundred dollars.

Hawesville, the county seat of Hancock county, is situated in the northeastern part of the county on the Ohio river, and on the Louisville, St. Louis & Texas Railroad, and is a flourishing town.

Hancock county is situated in the Second Congressional, Second Appellate, Sixth Judicial, Tenth Senatorial and Twenty-ninth Legislative Districts.

HARDIN COUNTY.

(Revised 1907 by H. A. Sommers.)

Hardin county was named after John E. Hardin and was created by act of the Legislature in 1792 out of a part of Nelson county. Several other counties have since been formed out of a part of this territory. The first settlement was at Elizabethtown, the county seat, and was known originally as the Seven valley settlement. Its population is largely made up of descendants of Virginia and Maryland families. Its foreign population is very small, the percentage perhaps being as small as any county in the State. The foreign element is almost exclusively German and confined for the most part to Elizabethtown and the territory adjacent.

The county has produced some of the leading men in the State, notably, Gov. John L. Helm, Gov. John Young Brown, Gen. Ben Hardin Helm, who was killed at Chickamauga. It was also the birthplace of Abraham Lincoln, the old Lincoln homestead having been subsequently included in what is now Larue county. Gov. John Ireland, of Texas, spent all of his youth in this county, and read law while he was driving a stage coach. President James Buchanan and Judge Joe Holt lived in Elizabethtown at one time and practiced law.

The county extends from West Point on the Ohio river to the Hart county line, a distance of forty-two miles north and south. The distance from the Nelson county line to the Breckinridge line, east and west, is about forty miles. The county in territory is one of the largest in the State.

The county is exceedingly well watered. It has Salt river and the Rolling Fork on its northern boundary, fed by numerous smaller streams. The land in this part of the county consists of rich bottoms improved every year from the rich deposits made from the backwater from the Ohio. Most of this land has been cultivated with corn for a hundred years, and the yield is from sixty to a hundred bushels to the acre according to the season. South of the Rolling Fork Valley is the range of Muldraugh Hills extending entirely across the county from east to west. On the slopes of these

hills is the finest fruit region in Kentucky. Peaches, apples, pears and grapes grow there to the greatest perfection and bring the highest prices in all the city markets. At the western end of this range is the town of West Point on the Ohio and Salt rivers. It is a thrifty village and has grown very rapidly in the past year. It has a number of natural gas wells and the gas is used in the town exclusively for lighting, heating and cooking purposes, and could be utilized for manufacturing purposes. West Point has also two railroads.

On the southern slope of Muldraugh Hill is Elizabethtown, the county seat of Hardin, three hundred feet above Louisville. It has a population of over 3,000, and has grown wonderfully.

The city has a fine system of waterworks; the source of supply is a spring that flows over a million gallons in twenty-four hours. A fine system of electric lights has just been completed with the most improved machinery. The town has two telephone exchanges with over two hundred customers. In fact, Elizabethtown is in every respect an up-to-date town with a bright promise of future growth and prosperity.

From Elizabethtown extending South is the famous Nolin valley, watered by Nolin river and its numerous tributaries. The lands in this section are as fertile as any in Kentucky. They are worth from \$40 to \$50 an acre and produce in a good season an average of twenty-five bushels of wheat to the acre and sixty bushels of corn. The cattle industry has grown wonderfully in the county in the past two years. Nearly a half million dollars' worth of cattle were shipped out of the county in the past year. No county in the State is in better fix financially. It is on a cash basis, has \$30,000 in the county school fund, has spent in the past few years \$100,000 in cash on its public roads, and owns 800 shares of Louisville & Nashville stock. The county ranks first in the State in its public school interests.

Elizabethtown is one of the largest mule markets in Kentucky, the shipment of this important branch of live stock aggregating \$500,000 annually.

The tax rate in the county is thirty-five cents on the hundred dollars, twenty-five of which goes to working the roads which is supplemented with the dividends on \$80,000 worth of L. & N. stock which belongs to the county. The road system in Hardin county

is the best in this part of Kentucky, with the possible exception of Warren county.

Hardin county is situated about the center of the Fourth Congressional District. It is also situated in the Third Appellate, Ninth Judicial, Twelfth Senatorial and Thirty-first Legislative Districts.

HARLAN COUNTY.

Nestled among the mountains, rocks and crags and countless hills in the southeastern part of the State, lies the picturesque and beautiful county of Harlan. Her mountains and hills are overlaid with Nature's most sublime handiwork of beauty, and underlaid with inexhaustible wealth. Her cliffs and her craggy face hold thousands of interesting views for the artist's brush. Her waters are bountiful, imparting life and joy to the thirsty soul.

The county is rich in coal, timber and builders' stone waiting for the iron horse, ax, pick and shovel to make countless fortunes for those who develop and turn her wealth into gold. Other builders' material is found in immense quantities, such as brick, clay, sand and concrete gravel, etc. There has been as high as twenty-nine coal veins discovered from base to summit of a single mountain, ranging in thickness from one to eleven feet. The coal is of a very high quality and much praised by specialists who visit the county and test its heating quality. The timber supply is immense and of the finest quality. Hickory, hard and soft maple, linden wood, beech, chestnut, birch, spruce, pine, hard (black) pine and the various oaks, such as white, black, water, chestnut, and other varieties are found in abundance. In fact, they are in their virgin state, except where locally destroyed to get the lands for agricultural purposes. Walnut, poplar, ash, cucumber and cherry have been considerably culled and floated down the Cumberland river to the mills located at Pineville and Williamsburg, where it is sawed into lumber and shipped to all parts of the world and turned into finished products.

The roads of Harlan county are the old dirt variety and are left in very bad condition all the year, hardly ever being worked. The present administration of the county has neglected this branch of the county's affairs, and there is scarcely a mile of road in the

county in fit repair for common wagon travel. Although it has failed to make and repair the roads, there have been several much-needed foot-bridges built within the last two years.

There are no turnpikes in the county. Harlan county has advanced very much in the last twenty years. The pack-saddle and sled has given way to the two-horse wagon; the water-mills are fast being superseded by steam ones; the huts and log houses are decaying and large frame structures taking their place, the old open pole cabins are gone and large roomy school and church buildings dot the county in every vicinity; old-style farming, where practicable, is gone and improved modes are taking their place throughout the county.

While the county's conditions are not such as to make it an agricultural county in the proper sense of the word, there are many fine "bottoms" along the Cumberland river and its tributaries that are fortunes to their owners. The "coves," as the uplands are called, are very rich and prolific, producing from thirty to fifty bushels of corn per acre. It is a fine potato country. Wheat, oats, rye, buckwheat and all the small vegetables do well in the county. Owing to the bad roads and lack of shipping facilities, there is no endeavor on the part of the farmers to produce more than is necessary for home consumption. Stock raising is resorted to by many of the farmers, and horses, mules, cattle, hogs and sheep are a source of profit to the producer.

Harlan would be one of the finest fruit counties in the State had it the proper shipping and transporting facilities. There are many apple trees known to be more than fifty years old still prolific producers of delicious fruit. All the small fruits and berries do well. There are many fortunes awaiting energetic men who will establish and maintain vineyards in Harlan county.

This county is the home of the honey bee and his daily labor and buzz would produce good incomes of sweetness to many persons of thrift.

Cumberland river has its source in Harlan county and, with its tributaries, drains the entire county. The river runs in a south-westerly direction and is not navigable in any part of the county, although it is used to float logs to market during high water.

There is no railroad in the county, although, owing to her vast resources of raw material, it would be a source of vast profit to the promoters and builders of lines within her borders. There have

already been several surveys made through the county, but, as yet, no work has been done on any of them.

Compared with twenty years ago, Harlan has advanced by jumps and bounds in an educational way. Then she drew on Virginia and Tennessee for nearly her entire corps of teachers, but now she has a surplus of her own. Then, in the estimation of her citizens, ignorance was bliss; now an education is happiness.

Morally, Harlan county is yet in her boyhood days. Yet when we consider that she was in the moral cradle only a few years ago, we can justly say "she has rebounded from her condition to a very great extent in the last ten years:"

Mount Pleasant, the county seat, is located in the very heart of the county. Nestled as it is in the "Three Forks of the Cumberland," surrounded by the most enchanting scenes of nature, and having outlets to the four compasses of the earth, there is no doubt that it will become the Pittsburg of the mountains as soon as a railroad enters to give transportation facilities. A fine brick court house and stone jail were erected fifteen years ago at a cost of several thousand dollars. The First State Bank was organized and established a few years ago, which is being operated at a good profit to the promoters. The Harlan Academy is an educational institution conducted and controlled by the Presbyterians, of which the people are very proud. There is one newspaper, two hotels and twenty other business houses in the town, and all seem to be in a flourishing condition.

The county was organized in 1819, out of Floyd and Knox counties. It is situated in the southeastern part of the State, is bounded on the north by Leslie and Perry, on the east and south by Letcher and the Virginia line, and on the west by Bell county. It is very rugged and mountainous. It was named in honor of Major Silas Harlan, a young Virginian, a gallant and accomplished soldier in our Indian wars.

Harlan county is situated in the Eleventh Congressional, Seventh Appellate, Twenty-sixth Judicial, Thirty-third Senatorial and Ninety-third Legislative Districts.

HARRISON COUNTY.

(Revised 1907 by C. A. Leonard.)

Harrison county was formed in 1793, out of parts of Bourbon and Scott counties, and named after Col. Benjamin Harrison, who was at the time a representative from Bourbon county in the Kentucky Legislature. Col. Harrison also represented Bourbon in the several conventions that met at Danville prior to the State's admission into the Union. He then became a member of the first constitutional convention.

From the original territory of Harrison portions have been taken to help form Campbell county in 1794; Pendleton and Boone in 1798; Owen, in 1819; Grant, in 1820; Kenton in 1840, and Robertson in 1867. It is situated in the north middle section of the State, lying on both sides of South Licking river; is bounded on the north by Pendleton county; northeast by Bracken and Robertson; east by Nicholas; south by Bourbon; west by Scott; and northwest by Grant county.

Main Licking runs through a small portion of the county in the northeast, cutting off a small section known as "Little Harrison" in a corner between Bracken and Robertson. The creeks emptying into Main Licking are Cedar, West, Beaver, and Richland, while Indian, Silas, Mill, Twin, Raven and Gray's Run flow into South Licking, the latter just at the corporate limits of Cynthiana. The county is thus well watered.

About one-half of the county is gently undulating, rich and very productive; the other portion hilly, but also quite productive; the whole well adapted to grazing; the soil based in red clay with limestone foundation. In recent years, diversified farming has been very profitable, both by private enterprise and co-operative capital, but mostly by the former. Corn, wheat and tobacco are the principal products, while the county has always been famous for the manufacture of whiskey, though this is not carried on to such an extent as formerly. In the year 1907 the production of corn was 496,517 bushels; wheat, 151,915 bushels; tobacco, 6,500,000 pounds. The average price of farm land has risen in the last few years, being placed by competent judges now at \$35 per acre, some

fine land having been sold recently for \$125 per acre. Most of the labor employed in the county is unskilled labor, farm hands receiving an average of \$13 per month.

Lead has been discovered about one mile south of Lair on the farm of Hinkson Brothers, and some fine specimens have been exhibited, but the mine has not been developed to any great extent. Iron ore and copper also exist, but have not been found in paying qualities. There are no longer any extensive timber resources in the county. Water possessing fine medicinal properties abounds in the county, but no springs are used as health resorts.

There are no navigable streams in Harrison county, and none capable of being made so. There are nearly 400 miles of turnpike, all the roads being free, and the fiscal court has in recent years constructed additional pikes by contract. A bond issue was voted in 1898 for the purchase of all pikes in the county, and a turnpike commissioner attends to all repairs and extensions. The dirt roads are kept up by the old system of "warning out hands." The county has always aided liberally in public improvements, the bonded indebtedness being \$57,000 in 1907, and the rate of taxation for county purposes being fifty cents on the one hundred dollars' worth of taxable property.

There are fifteen rural free delivery routes over beautiful roads, nine starting from Cynthiana, the county seat, radiating in all directions, three from Berry, two from Boyd, and one from Sunrise. These routes make an aggregate of over 400 miles and serve more than 7,500 patrons. There are about twenty-five miles of completed railroad in the county, the Kentucky Central branch of the Louisville & Nashville running for the most part along the banks of South Licking, and the Cincinnati Southern through a small section of the western part of the county.

Cynthiana, the county seat, was established December 10, 1793, and named in honor of Cynthia and Anna, two daughters of the original proprietor, Robert Harrison. From this fact it has received the soubriquet of the "Maiden City." It is situated on both sides of South Licking river, 34.3 miles from Lexington by rail, and sixty-six from Cincinnati. The census of 1900 gave the city of Cynthiana a population of 3,257, this number being increased to more than 4,500 by a recent extension of the city limits, and by natural growth within the original limits of the city. Its business men are of the most substantial character, being well known for

enterprise and thrift. They have organized a Commercial Club, which has been the means of starting an overall factory, a cigar factory and other enterprises that increase the wealth and population of the city.

The Cynthiana High School was organized in 1872 and is a continuation of Harrison Academy, which was chartered in 1798 and opened in 1804. From that year, an academy or high school has been maintained in the town without interruption. A principal and eleven teachers are now engaged in the work of instruction, and the number of graduates of the high school is two hundred and twenty-five. The Board of Education maintains also a good graded school for colored children. Several good private schools have aalways existed, making Cynthiana's facilities equal to those of any town in Kentucky. She was the pioneer in the establishment of a first-class graded school, and is just completing, in 1907, a new school building at a total cost of \$45,000. This building is strictly modern and first-class in every particular. The public schools of the county are in fine condition, as they possess a very competent corps of teachers. The State Fund is supplemented in some districts by local taxation and subscription.

Harrison county is in the Ninth Congressional, Sixth Appellate, Eighteenth Judicial, Thirtieth Senatorial and Seventy-sixth Legislative Districts.

HART COUNTY.

(By S. F. Middleton.)

Hart county is located in the western central portion of the State, its northern boundary line being only sixty miles south of Louisville, on a line of the Louisville & Nashville Railroad. It was formed out of a portion of Barren and Hardin, and established by an act of the General Assembly, approved January 28, 1819. It was named in honor of one of Kentucky's most distinguished pioneers, Capt. Nathaniel Hart. The topography of Hart is far from uniform, embracing considerable level land and much that is broken and undulating, interspersed with numerous

hills and knobs. Green river flows through the county from east to west, dividing it into almost two equal sections, and the soil of the southern section is, for the most part, limestone of exceeding fertility and strength, yielding abundant harvest of all the grains and grasses grown in the State, and is unsurpassed for the production of the fine graded tobacco.

On the north side of Green river the upland soils are generally much lighter than in the southern section, being a sandy loam, but in the numerous valleys and rich bottoms, striking the river and creeks, fine bodies of land are found that are exceedingly productive and well adapted to the growth of any and all crops raised in this latitude. In fact, every class and variety of soil can be found in this county, while the supply of pure, fresh, running water is unlimited. The crops now principally grown are corn, wheat, oats, rye and tobacco. Peaches, apples, pears, plums, grapes, tomatoes, and all the berries common to the climate grow well in every portion of the county. Only a small percentage of the original forests is left standing in the southern section, but in the section north of Green river there is still a considerable quantity of hard timber, suitable for sawing into lumber. The growth consists of the different species of oak, hickory, ash, walnut, poplar, beech, and some wild cherry. This timber is now being cut into lumber, staves, ax-handles, spokes, etc., by portable mills, and hauled to towns and railroad for market. Green river is the only river of any considerable size in the county, while Nolin river on its western boundary is next in size, but neither of these is large enough to be available for navigation, without the aid of locks and dams, which are being built and we have slack water now at the Mammoth Cave, which is fourteen miles from ~~Munfordville~~ ^{Munfordville}, the county seat of Hart county, and we hope and believe that in the near future slack water may be brought to Munfordville. This will bring about competition between the railroad and river, which will prove a blessing to Hart and adjoining counties. The county is well watered and drained by the two rivers above mentioned, also by Bacon creek, Lynn Camp creek, Cub Run, Dog creek, Cane Run, and many smaller creeks and runs, all of which afford ample water-power to propel machinery.

The Louisville & Nashville railroad divides the county near its center, running through the same north and south and crossing

Green river at right angles near Munfordville. Something more than twenty-six miles of said railroad are within the county.

The county has about sixty-five miles of turnpike roads, which are all open to travel, free from toll, and kept up by the county in the same manner as the other county roads are, and run through the principal towns and villages of the county. The other county roads are dirt roads and are fairly good for traveling, except during the rainy season. The execrable system under the general laws of the State is the only existing provision for working the public roads of this county, and while upon the whole the system and methods of working and repairing these roads is somewhat improved in as much as in the past two years we have adopted the system of working by taxation, and have two rock-crushers and two graders and twelve head of mules, wagons, etc., all owned by the county. We have built and have under construction about twenty miles of pike, and the people of the county are well pleased with the present system and it is growing in favor daily and the outlook is very flattering, but much remains to be desired in this direction.

A good vein of iron ore extends through the eastern end of the county, northward from Green river to the Larue county line, and in the past, two furnaces, the old "Clay" and "Aetna", did a flourishing business working it, but for lack of cheap transportation these furnaces are now abandoned. An excellent quality of white limestone, suitable for building purposes, is found in different parts of the county in abundant quantities, while recent discoveries of large quantities of onyx marble give promise of the development of very valuable quarries of this fine stone in the near future.

The clays of Hart county cover the greater portion of the county, with the exception of the area south of Green river. The area south of the river shows only limestone exposure and consequently only the ordinary red plastic clay with a large percentage of iron, which results from limestone decomposition. Over the northern portion, there are many Lower Carboniferous exposures which naturally appear around the margin of coal fields, and with them valuable clay. In the greater portion of the western part the low land and stream bottoms show exposures of St. Louis limestone. The low hills contain only sand and limestone of the Chester Group, the sandstone at the base of which is known in

Kentucky reports as the Big Clifty sandstone. The high hills of this section are capped with loose pebbles and old eroded cliffs of the Conglomerate Sandstone, which is the basal formation of the Upper Carboniferous. Over a section of several square miles east of the L. & N. Railroad, in the Bonnieville region, there is a very marked unconformity. Here the Chester Group is scarcely, if at all, represented at places, and the Conglomerate Sandstone rests almost upon the St. Louis limestone. It is over this section that the most valuable white clays in the county occur.

There have been several exposures made on the north side of Green river in Hart county, and in very instance there has been inexhaustible quantities of plastic clay and in some instances, the pure white Kaolin has been found in large quantities. The clay term "stained kaolin" is slightly colored yellowish with iron oxide; probably not to such large extent, however, as it cannot be washed white, or will not burn white. These purest white layers contain no injurious impurities and require no mixture of foreign material in order to make it suitable for the manufacture of fine porcelain or chinaware.

In Hart county, as in most counties, many natural curiosities and singular formations exist that are pointed out with pride by the inhabitants, but as they are only interesting because they are curious, will mention but one. About four miles east of Munfordville, on Green river, a large, well-known spring is situated, which ebbs and flows twice in twenty-four hours with the same regularity as the ocean tide.

The educational facilities of the county have materially improved in the last decade, being now ninety white schools and fourteen colored taught in the Common School system with a corps of efficient, enthusiastic young teachers, while the Green River Collegiate Institute at Munfordville, the Horse Cave Graded School at Horse Cave, the Gilead Institute, The Lillian Academy at Canmer, and other good schools in the county furnish ample facility for the prosecution of more advanced studies.

During the past ten years considerable advance has been made in the development of industries in the county. Several new mills with improved machinery, having been erected; a number of small factories for the manufacture of ax handles, wagon spokes, staves, etc., are now in active operation. Two canning factories, one at Bonnieville and one at Rowletts, are in operation and both claim

to be doing a thriving business. The greatest enterprise ever undertaken in the county of Hart is the building of the bridge across Green river at Munfordville, which is now under construction by a stock company, and which will cost from \$30,000 to \$50,000, and it is expected that it will be complete by the first of the year 1908. There have been several oil wells bored in the western portion of the county where strong indications of oil have been found, one of which is 1,300 feet deep and stands full of oil, said wells having not been operated. Gold, silver and lead in limited quantities have also been found and tentative efforts are being made by local people to develop same. Asphalt and coal are also being discovered in quantities that promise rich returns in working the deposits, and the resources of the county are such as to justify the profitable employment of much more capital and these and other industries.

Both white and colored labor is available in the county, the larger portion being colored, however, for farm work. Good reliable laborers are paid from \$1.00 to \$1.50 per day; other classes of labor varying from \$15 to \$20 per month.

Munfordville is the county seat of Hart county, pleasantly situated upon a high elevation overlooking Green river, at a point where the L. & N. Railroad crosses same. It is seventy-three miles south of Louisville, has a population of eight hundred, with four churches, three white and one colored, a good public school building, modern courthouse and public offices, a bank and weekly newspaper and a good system of waterworks. It is the principal shipping point of the section lying north of Green river and large quantities of tobacco, lumber, live stock and miscellaneous products are forwarded from this point. Horse Cave is a flourishing town on the L. & N. Railroad, eight miles south of Munfordville, and eighty-one miles from Louisville. It has a population of twelve hundred and is the most important shipping station in the county, the exports consisting principally of wheat, live stock, tobacco, fruits, poultry, etc. It is the shipping point for an extensive territory, lying north and eastward, has two good hotels, two banks, weekly newspaper, three churches, a large well-equipped flour mill, a number of fine business houses and a number of very fine residences. Rowletts, on the L. & N. Railroad, three miles south of Munfordville, has a population of 250 people, Bonnieville, on the same railroad, has a population of 250, Canmer,

on the Bardstown & Glasgow turnpike, nine miles east from Munfordville, has a population of 200. Hardyville, situated on the same pike, has a population of 150. All are progressing and thriving villages.

Hart county is situated in the Fourth Congressional, Third Appellate, Tenth Judicial, Thirteenth Senatorial, and Thirty-third Legislative Districts.

HENDERSON COUNTY.

(Revised 1907 by S. D. Harris.)

Henderson county was formed out of Christian county in 1798 and was organized June 4, 1799, and was named in honor of Judge Henderson, more commonly known as Col. Richard Henderson. It is situated in the southwestern part of the State on the Ohio river, which forms its northern boundary for a distance of about seventy miles.

Daviess and McLean counties bound it on the east, Webster on the south, and Union on the west. Green river runs along its eastern border for a considerable length, thence in a northwesterly direction, emptying into the Ohio some five or six miles above the city of Henderson. Both streams are navigable for steamboats at all seasons of the year. The bottom lands along these rivers embrace many thousands of acres, the soil of which is extremely fertile, producing corn and tobacco and other crops in enormous quantities. In the production of corn, wheat and tobacco, Henderson county ranks among the foremost of the State, taking the lead in tobacco, her area considered, her soil being particularly adapted to this product, as is shown by some two hundred analyses of soil taken from all parts of the State, which showed her tobacco soil to be the richest with but one exception. The soil is well adapted to the growth of all the cereals known in this latitude, the uplands comprising about three-fourths of the area of the county; besides being well adapted to agriculture, is also well adapted to fruit culture, there being some as fine fruit grown here as can be found elsewhere in the State and very lately there has been considerable attention paid to this branch of industry. From 10,000 to 18,000 barrels of apples are grown in Henderson county in good fruit years.

468 *Seventeenth Biennial Report Bureau of Agriculture.*

Henderson county raises each year about 9,000,000 pounds of tobacco, 1,000,000 bushels of corn and 500,000 bushels of wheat.

There is an abundance of timber and while there is a great variety, oak, ash, hickory, poplar and gum largely predominate.

There is a great disposition of late to diversified farming, it proving much more profitable and safer to the ordinary farmer. This mode of farming, taken in connection with the milling and manufacturing industries, gives employment the year round to all the laborers of the county at remunerative prices. The labor of the county is noted for its intelligence and thrift and in some measure accounts for the general thrift and wealth of her citizenship. Farm labor commands from \$12 to \$15 per month, with board, the year round. The cropping system is very much in vogue. The population of the county is rapidly increasing.

The city of Henderson is the county seat and stands on the banks of the Ohio river, fully thirty-odd feet above the highest water known. Her water and railroad facilities for transportation, surrounded as she is with any amount of coal and timber, ought to be a sufficient guarantee for the successful employment of capital looking for investment in the manufacturing industries. When incorporated as a town in 1810, Henderson had a population of only 160 persons; so steady has been the growth that today the population is near 18,000. The city has a most excellent system of schools, where the poorest child may obtain a liberal education. She owns her electric light, gas and water works, which insures necessities at the very lowest cost possible to the consumer. She is noted for her well-graded, graveled and broad paved streets, her fine residences and particularly for her wealth.

Henderson has seven banks, with a total capital of over a million dollars and a surplus of over \$300,000. We have 35 manufacturing plants, including a cotton mill, wagon works, furniture factory, buggy factory, brick and tile works, box factory, and others.

The other towns in the county are: Audubon, Spottsville, Zion, Hubbardsville, Robards, Cairo, Corydon and Dixie, besides many smaller places, all seeming to be doing business in a substantial way. The population of this county is intelligent, generous and hospitable, who stand with open doors and outstretched arms, ready to welcome immigrants of brain, brawn and capital.

There are two nurseries in the county, one at Cairo and one at

Robards, both seeming to be doing a thriving business. Telephones have been put up along all the most public roads, and are tapping a great many farm houses.

Rural free delivery has been established in almost all parts of the county to the great convenience and satisfaction of the farming community.

There is one mineral spring near Green river, which very recently is attracting considerable attention, many going thither to drink the waters for their health. A considerable amount of coal is being mined at different points in the county. Mines are being opened at almost every little town, and great interest is being manifested and much capital employed in this direction.

We have a splendid system of schools all over the county and most excellent teachers and all our roads are toll free.

The county has a most excellent system for working her public roads, there being a special act allowing her to levy and collect a tax for same, the amount being about \$18,000 per year at present.

Henderson county is situated in the Second Congressional, First Appellate, Fifth Judicial, Fifth Senatorial and Thirteenth Legislative Districts.

HENRY COUNTY.

(Revised 1907 by Wm. P. Thorne.)

Henry county was formed out of Shelby in 1798 and was named in honor of Patrick Henry, Governor of Virginia. It is located in the bluegrass section of Kentucky, and is one of the counties of the famous Ashland district. It contains over 170,000 acres of land. It is bounded on the north by the Ohio river bottoms and productive fruit sections of Carroll and Trimble counties; on the east by the picturesque Kentucky river which is navigable all the year round and over which boats from Louisville, Madison and Cincinnati make daily trips to and fro; on the south by Shelby county; and on the west by Oldham county. The lands in Henry county, except along the river front, are undulating—just enough to drain properly—and present a view as fair as any the eye of man

ever beheld. Her teeming fields of corn, wheat and burley tobacco, the red clover fields and waving bluegrass, and timothy and orchard grass, add to the view and make it a veritable garden of nature. The county has much timber, consisting of yellow poplar, black walnut, ash, white and red oak, beech and mulberry. The land is limestone formation and is especially adapted to the raising of the crops mentioned, as well as alfalfa, which has only recently been grown in quantities. The Little Kentucky river winds through her western border, passing out at a point near Sulphur. Drennon creek heads within the limits of the city of Eminence and passes New Castle, the famous Drennon Springs, and empties into the Kentucky river about a mile below the latter place. The county is noted for its adaptability in the matter of fruit culture, growing in plenty apples, peaches, pears, and all other fruit proper to a temperate climate. It is said that some of the bottom lands in this county have been growing corn year by year for over a century, and that the land is just as productive and fertile now as at the start. This county is also noted for its palatial homes and the distinguished and courteous owners and occupants. It was the home of Humphrey Marshall, Judge Elijah Nuttall and other men of large reputation. It is the birth-place and home of ex-Chief Justice William S. Pryor, and her past and present history is mingled with the names of Hon. Z. F. Smith, Judge Joseph Barbour, Judge George C. Drane, Judge Warren Monfort, Martin D. McHenry, Edmond P. Thomas, Hons. John D. Carroll, C. Allison Holland, W. B. Moody, H. K. Bourne, Lieut. Gov. Wm. P. Thorne, and Genl. Humphrey Marshall.

The county has thirteen flourishing banks, sixteen cities of the fifth and sixth classes. New Castle is the county seat, with a population of about 1,000. Eminence is the metropolis, with a population of about 2,000, situated in the crown hill of four streams of water—Clear creek, Fox Run, Drennon and Little Kentucky—and is the highest point between Louisville and Lexington. It is a very progressive, up-to-date little city, having electric light and water plants, brick streets and granitoid sidewalks. Churches, schools, large flouring mills, distilleries and other institutions help make it a very important point. The city is a water-shed for Henry and Shelby counties, the rains falling on the north side running into Drennon and Little Kentucky and thence into the Ohio and Kentucky rivers; that falling on the south side going into the streams of Shelby

county and thence into Salt river. Drennon Springs, which was discovered in the early history of the State, has black, blue and white sulphur waters, as well as chalybeate. It was a famous watering place for Southern people before the war, and was at one time the home of the Hon. James G. Blaine, but prior to that Henry Clay frequently visited here.

Lead ore is found cropping out along the bluffs of Kentucky river, and a vein of same crosses Drennon's creek, two miles above its mouth, to Kentucky river and into Owen county. There are traces of silver found; in working lead mines years ago it was found in moderately paying quantities. There are several lead mines now in active operation in the county, and the ore is being found in paying quantities.

The educational system is as good as can be obtained. Graded schools are taking the places of the old common schools in the larger towns. There is no complaint on account of taxation for school purposes, and the people generally are progressive and willing to give the cause of education full swing and put up money for it.

In the long ago Henry county not only boasted of her wealth, palatial homes, refinement and educational advantages, but her reputation was well earned. In this matter here is an inviting field to the educational worker and energetic teacher who will honor the profession. The people are awaking as from a long slumber. Education is putting on new life, new and substantial graded school-houses are taking the places of old ones and there is improvement all along the line.

The Louisville & Nashville Short Line to Cincinnati runs through the western portion of the county; the Louisville & Lexington through the southwestern, while the entire eastern section is furnished with a natural line of transportation by Kentucky river, even at lowest stages of water, carrying lumber, tobacco, corn, wheat and other products to the markets of the world. There are two locks and dams in Henry county—Lock No. 2, at Lockport and Lock No. 3 at Gestville. A railroad is now being built from Eminence to Carrollton and Madison, Ind. With fair railroad and water transportation facilities, the public roads suffer for want of a general road system covering the entire State. There are over four hundred miles of roads, two hundred and fifty of which are macadam. They

are maintained by taxation and are under contract system. The condition of the roads is improving. The contract system for working roads is being extended and proving satisfactory, and some new pikes are being made.

The labor system, like the roads, is not a perfect one, nor the character of labor employed. It ranks about with other counties and is varied as the people. Prices paid are generally from fifty cents to one dollar per day and from ten to fifteen dollars per month "with board."

The county seat is New Castle, one among the oldest towns in the State. Some of the old landmarks remain, giving proof of age. Like many good other good and important towns, it had to give way to railroad towns. The county has erected a fine court-house and jail and the citizens have built elegant homes. It is an important town and does a good business notwithstanding it is handicapped with a railroad to the north and south of it. Besides New Castle and Eminence, there are Smithfield, Pendleton, Sulphur, Campbellsburg, Turners, Port Royal, Franklinton, Bethlehem, North and South Pleasureville, Defoe, Gest and Lockport, all of which are live, good centers of local trade and custom.

Henry county is in the Seventh Congressional, Fifth Appellate, Twelfth Judicial, Twenty-first Senatorial and Fifty-fourth Legislative Districts.

HICKMAN COUNTY.

(Revised 1907 by E. B. Walker, Clinton, Ky.)

Hickman county formally embraced all the territory now subdivided into Ballard, Carlisle, Fulton and Hickman counties, lying in the southwestern extremity of Kentucky, bordered on the west by the Mississippi river, and on the south by the State of Tennessee. Hickman county was organized by an act of the Legislature in 1822, and in 1842 Ballard and Fulton counties were subtracted from it, leaving 226 square miles of territory, now one of the richest farming sections in the State. The county was named in honor of Capt. Paschall Hickman, a native of Virginia, who emigrated to Kentucky, when but a boy, with his father, Rev. William Hickman, who settled in Franklin county. Captain Hickman won

his military title in the early Indian wars, and he was severely wounded in the battle of the River Raisin.

The general face of the country is undulating, broken at intervals by hills and valleys. In the bottom section, contiguous to the river and creeks there remains yet a large area of wild land, in forest; but by degrees the land is being cleared for cultivation. The soil is generally a rich brown loam, with streaks of sand and clay deposits. It is a fertile soil and produces abundantly when properly handled. The principal crops are corn and wheat, but tobacco is also raised successfully, as well as all of the garden crops. Stock raising has become a considerable factor in the county's resources in late years, and most of the corn grown is fed here at home and sold "on the hoof."

In good seasons the wheat yield is from twenty-five to forty bushels per acre, and the corn yield from fifty to seventy-five bushels. Sweet and Irish potatoes, especially in that section known as the "Potato Patch," grow abundantly.

In recent years the value of farm land has steadily advanced, until now the price averages about forty dollars an acre. Many of the farms are well improved, and a ride along the country road reveals an unwonted growth of log cabins into modern houses, surrounded by all the conveniences which make American farm life the ideal life of the well-to-do.

Clinton is the county seat and it is a progressive little city of 2,000 inhabitants, on the line of the Illinois Central railroad. The town is situated in the very heart of the county, and is surrounded by fine farms in the highest state of improvement, which readily sell at fancy prices when they can be bought at all, which is not often.

We have a splendid \$25,000 court house which is as good as new. It is a modern brick building, located in the center of the city and fronted on three sides by blocks of substantial brick business houses, with a church and residence block on the south side.

We have two colleges, Clinton College (Baptist), founded by Father Willis White in 1873, and Marvin College (Methodist), built in 1884 and now the property of the Methodist Conference. Both institutions have ample grounds, well kept, and each has, besides the college buildings proper, brick boarding halls built within recent years by public subscription.

474 *Seventeenth Biennial Report Bureau of Agriculture.*

Clinton has had waterworks since 1898, and an electric lighting system was put in in 1903.

The county tax is fifty cents *ad valorem* on the \$100, and poll tax \$1.50.

The Methodist and Baptist churches are the strongest in the county, though several other denominations are represented among our Christian people.

Since the Illinois Central railroad was built to Clinton thirty years ago, this town has grown from a straggling village to a thriving and progressive young city, whose ambition is to be "the best town in Western Kentucky."

Hog and cattle raising have become in recent years important factors in our commercial prosperity; cattle buying (which term includes hogs and sheep) is a regular business that occupies the undivided attention of a number of strong firms, and many thousands of dollars are paid to our farmers and stock raisers on this account. Our cattle are marketed in St. Louis, Cincinnati, Louisville and Chicago, principally. A great deal of valuable timber has been cut and sold in the county, in the past few years, but the supply is far from exhausted.

Beshers & Jackson, owners of the Star Mills, built in 1901, have in connection with their mill an elevator of 25,000 bushels capacity and their output of flour is 150 barrels a day for which they always have a ready demand.

One thing that is needed in Clinton is a tobacco warehouse and local capitalists are planning to add that to our industries this year.

Besides Clinton, there are several other wide-awake towns in the county, viz.: Columbus, on the Mississippi river, a town of about 1,000 inhabitants. It has a number of manufacturing industries, and is also in the fruit and berry growing belt.

Other small towns in the county are Moscow and Oakton, on the Mobile & Ohio railroad, Spring Hill, Beelertown, Croley, Cypress, Bugg, Hailewell, Stubbs and Fulgham.

We have more than fifty public school houses in the county, and the general interest in education is a safe index to the character of our people. At Columbus and Oakton free graded schools are in successful operation. At Columbus there are several important manufactories: The J. T. Polk Preserving & Canning Factory, a heading factory, stave factory, and Rocker's large pottery. These con-

Seventeenth Biennial Report Bureau of Agriculture. 475

cerns ship their products to all parts of the world. They employ hundreds of men and boys, and their pay-rolls run into thousands of dollars a month.

There are four rural mail routes out of Clinton and one from Moscow. Besides these there are seven other rural mail routes which reach different sections of the county, giving our rural citizens an almost complete home mail delivery. The county is also completely covered by telephone systems.

The Business Mens' League at Clinton is reaching out for new industries and the outlook is very promising for a straw-board factory, which is expected to utilize for commercial purposes the large quantity of wheat straw produced annually which has been a waste product up to this time. An ice plant and a tomato canning factory will be established at Clinton within the year.

Clinton has two State banks, Columbus two, and Moscow one.

The criminal division of our courts is seldom overburdened with business, for we have little crime to mar the good name we have established.

In the past few years, there has been a steady stream of immigration here, men of means from other counties of the State, and from Tennessee, Illinois, Missouri, etc., having purchased valuable town and country homes here. There is enough cheap land here yet to provide homes and farms for many families, and land of this kind can, as a rule, be bought on easy and satisfactory terms.

Hickman county is situated in the First Congressional, First Appellate, First Judicial, First Senatorial, and First Legislative Districts.

HOPKINS COUNTY.

(Revised 1907 by J. J. Glenn, Madisonville.)

By an act of the Legislature of Kentucky, approved December 29, 1806, Hopkins was, in the year 1807, formed into a county. This territory was taken from the southern portion of Henderson county and lies between the 87th and 88th parallels of west longitude and 37th and 38th parallels of north latitude. It is bounded on the north and the northwest by Webster county, on the west by

Caldwell, on the south by Christian and on the east by Muhlenberg and McLean. Tradewater river, a small and unnavigable stream, forms the boundary between Hopkins and Caldwell, while Pond river, another small stream, marks the boundary between this and Muhlenberg and McLean counties. The extreme length of the county is about forty miles, while its width is something over half its length, thus giving the county an area of nearly 500 square miles. The surface of the county in some portions is rough and hilly, but most of the land is undulating and very productive. The principal products are tobacco, which is one of the staples and which usually brings a good price. Wheat, corn, rye, oats, sorghum, potatoes and all kinds of garden vegetables grow to perfection from the soil. Gardening, or truck farming has of late years been made very profitable, as there are a great many people in the mines who depend upon the gardener for their supply of vegetables for the table.

Such fruits as are grown in other sections of the State grow in Hopkins county. Strawberries, raspberries, blackberries and melons are a profitable crop to the ones who cultivate intelligently. Of late farmers are turning their attention to the making of hay, and the raising of cattle, horses, hogs and sheep, though the latter industry is not regarded with perhaps as much favor as some others.

The housewives of the county are giving a great deal of attention to poultry, especially to chickens. The hen is now one of the important adjuncts of the well regulated farm. The hen and her eggs, with her frying size offspring, commands a market value of which the people a quarter of a century ago never dreamed.

The timber interests of Hopkins county are not what they were a few years ago. In fact it is beginning to be rather a scarce article. Where a few years ago thousands of acres of good timber grew, there are now only a few acres and that is held at a price that makes it almost out of the reach of the saw mill. Here as elsewhere in the State, good timber is becoming scarcer each year, a great deal of which scarcity is attributable to the reckless waste by the people of less than half a century ago.

The principal industry of the county, outside of farming, is coal mining. Hopkins county contains about a quarter of a million acres of very fine coal land. There are more than a dozen

different mines in the county. The output for the last twelve months has been nearly 2,000,000 tons. If this coal were loaded on cars and all one behind the other, while the engine would be standing in Cincinnati, the caboose would not have passed Madisonville. More than one-fourth of the coal mined in the State is taken from the mines of this county.

Madisonville, the county seat, has a population of about 6,000, and has been dubbed as "The best town on earth." That appellation was applied to the town a few years ago by the writer, who kept that motto at the head of his paper, until now there is not a man, woman or child of the town who is not ready and willing to swear that there is no town in the Union that is superior to our own beloved Madisonville.

Our public schools are the equal of any in Kentucky. There is a corps of teachers who, from Superintendent down, each and every one doing his or her duty. The citizens stand by the school and wonder now why it is that we did not have graded schools long before we got them. The graded schools have been worth more to the town than any other one or even half dozen enterprises that have ever been originated or maintained by the people. They have brought to us a class of citizens who come here to educate their children.

The various religious denominations are all represented. The church buildings are large and commodious and the preachers who have charge of these congregations are truly men of God. There is entire and perfect harmony among the various religious denominations, all frequently meeting and worshipping together as a band of brothers and sisters. A new \$25,000 Y. M. C. A. building is a monument to the enterprise of the Christian people.

There is a religious atmosphere about Madisonville that is found in but very few other towns. We do not mean by this that our people are cranks or fanatics on the subject of religion; we mean that the people as a whole believe in right living and correct morals. What is said of the morals of the town apply generally to the people who live in the country and in the smaller towns.

In Hopkins county and in Madisonville there is no excuse for any one being without a means of livelihood. There is not only a job for every one, but in most cases two good jobs waiting for the same man. There is so little excuse for idleness that idleness is almost regarded as a crime. It is a town and a county without many

very wealthy people, while the great majority are beyond the stress of poverty. The wealth is very equally divided, none extremely wealthy and none extremely poor. The town and county are ideal as far as home life and happiness are concerned. Our doors are open to the sober, moral and industrious, but closed to the worthless and shiftless.

Hopkins county is in the Eleventh Legislative, Sixth Senatorial, Fourth Judicial, Second Congressional, First Railroad Commission, and First Appellate Districts of the State.

JACKSON COUNTY.

Jackson county was formed April, 1858, out of parts of Clay, Laurel, Rockcastle, Madison, Estill and Owsley counties and lies in the southeast-central part of the State, and is bounded by the aforementioned counties, and is about 150 miles south of Louisville, and 100 miles north of Cumberland Gap, and nearly on a direct line from one to the other.

Jackson county commemorates and was named in honor of the venerable Andrew Jackson, seventh President of the United States.

The headwaters of the Kentucky and Cumberland rivers find their source in this county; that is, their main tributaries. The main water courses of the county are: Terrill's creek, Moore's creek, Pond creek, Laurel Fork, Indian creek and Horse Lick, tributaries to the Rockcastle river, which washes its shores for more than thirty miles and then makes its way off by way of the Cumberland and Ohio rivers to the mighty "Father of Waters," where it commingles its waters with the waters of South Fork, Middle Fork, War Fork, and Cavanaugh Fork of Station Camp creek, the other water courses of Jackson county, as it is borne along to the mighty "Father of Waters," by way of the Kentucky and Ohio rivers. None of these streams are navigable, or used as means of transportation, save in the transportation of logs and lumber, though all are available for water power, for the running of machinery, mills, etc.

The soil of Jackson county is considerably varied. The north-west and western parts of the county are very fertile, but much broken by hills, which are quite steep, the soil being a mixture generally of lime and sandstone, underlaid with limestone. Within

the last two years there has been found in the western portion of the county around the foot of what is known as the Big Hill, an abundance of mineral ore, which contains gold and copper, but which is not in paying quantities as yet, but the mines have not been fully developed. It is thought by many that this ore, if properly developed, would be found to be rich and in paying quantities. The eastern and southern parts are nearly level, being slightly undulating, with soil fairly fertile and productive, comprising by far the best farming lands of Jackson county. The character of the soil is therefore so varied that it is suited to most all crops, the principal ones of which are named in order of their importance: Corn, wheat, oats, tobacco, potatoes, fruits, etc. Price of land is from \$2 to \$10 per acre.

The county at one time before settlement presented an unbroken forest of fine timber averaging not less than fifteen to twenty-five thousand feet per acre, fully 70 per cent of which still remains in its natural state. The principal growth is white oak, poplar and pine, which greatly predominates and is of good quality. The other kinds of timber are the various species of oak, pine, beech, linden, hickory, buckeye, cedar, maple, birch, sugar-tree, walnut, gum, chestnut, etc. The great body of forest land is being consumed very slowly commercially, and what is being so consumed reaches market in the shape of hoops, staves, ties, tan bark, lumber in the rough, etc., being hauled on an average of fifteen to twenty miles to market.

No other county in the State has finer or better fields of mineral lands than Jackson, comprising coal, which is yet but little mined, iron, copperas, saltpetre, oil, building stones, clays, etc., in abundance. The coal veins in this county are often found ranging in thickness from thirty to sixty inches and two and three strata, one above the other, in all the hills at hand. This wealth of mineral, like the timber wealth, remains in an undeveloped state for the lack of transportation of any kind. There is nowhere a better field for capitalists than here. Every avenue is open and the fruits abundant. And nowhere are there more inducements for railroad philanthropists and a possibility for more success.

The northwest part of the county has many caverns, caves, ravines, cascades, waterfalls, Indian mounds, Indian graves, stalactites, stalagmites, ortlios, chinoid heads, spikes, tomahawks and many other remains, sights and sceneries, both interesting and

attractive to sightseers, excursionists, mineralogists and others who visit that part. We have no health resorts in the county, but many mineral springs, such as the different kinds of sulphur, lime, lithia, etc., whose waters possess the highest medicinal value and some day promise well. Our scenery and springs can not be surpassed, either in beauty or value. There are many caves in the county from one-fourth to one mile in length, and any one seeking pleasure or profit can find no better place.

One industrial development is wanting; we have few mills or factories of any kind, and everything used most is shipped in, save corn, meal and stock. Our consumption and the readiness and abundance and cheapness of coal and water afford good opportunity for investments in this line, with a fair promise of ample returns. We have no railroad nearer than the Louisville & Nashville, and the Cincinnati Southern, which is from eight to sixteen miles from the nearest boundary. We have no pikes, but the public roads are fairly good, and maintained by the militia labor; the road system is apparently on a standstill, or improving very slowly, and more adequate road laws are needed, and the attention of the Legislature is invited to that fact. The people of the county raise stock, and farm on a small scale generally for a living. There is some work done in the lumber regions. The price of labor ranges (including boarding expenses, which are usually borne by the employer) from \$10 to \$20 per month. Or, in other words, \$13 per month and board, or about \$18 and board themselves.

In Jackson county we have sixty-eight public schools, somewhat upon the plan of all others in the State, only we can boast of the best school-houses of any county in the State, as per our population and wealth. Our county is fairly well supplied with churches, most every locality having a church-house. McKee, the county seat, is a small town situated in the center of the county and not like Rome of old on her seven hills, but between four hills on "Indian" creek, about one mile above, where tradition says the Boone and Calloway girls were rescued by their gallant lovers July 17, 1776, something of which every one knows. McKee is a thriving little town, and within the last five years has doubled itself in size and population; and within the last two years Eastern philanthropists have built a splendid school building and other costly buildings within the town.

We have few other towns. The people of Jackson county are

wanting a railroad, and the best route is up Laurel Fork and Indian creek, through McKee, Moulder, Burning Springs, Manchester and on. With this our coal, timber and pasture and farm lands become available and our people wealthy. The county has a population of about 11,000.

The county roads are bad, and worked by hands called out by overseers. They are better worked of late than heretofore.

It is situated in the Eleventh Congressional, Fifth Appellate Twenty-seventh Judicial and Seventeenth Senatorial Districts.

JEFFERSON COUNTY.

(Revised 1907 by M. F. Johnson.)

Jefferson county, named in honor of Thomas Jefferson, then Governor of Virginia, was established by the Legislature of Virginia, May 1, 1780. It was one of the three counties formed of the old county of Kentucky, which had, by a similar eliminating process, been made out of the then county of Fincastle, in 1776. Fincastle county disappeared when Kentucky county was carved out of it, and Kentucky county in turn passed out of existence when Jefferson and the other two counties, Lincoln and Fayette, were carved out of it. Since then eighteen counties have been carved out of Jefferson county, and parts of twelve others.

The county of Jefferson as it now stands with its 233,206 acres, is bounded on the north by Oldham, on the east by Spencer and Shelby, on the south by Bullitt, and on the west by the Ohio river. Except in the eastern and southern portions where hills and knobs occur, its surface is generally level and well watered by Beargrass creek, Floyd's Fork and Pond Creek. Besides Louisville, the chief city of the State, of which an extended notice will be found in list of cities, it contains some of the oldest villages, such as Jefferson-town and Middletown.

Jefferson county may be said to have begun its political existence on March 7, 1781, when its first county court was held. There was then no court house in which to hold court, and the magistrates assembled in the old fort at the foot of Twelfth street. There is no

reliable record of the names of the justices who held this first court, but they are believed to have been William Pope, John Floyd, George Slaughter, Isaac Cox and Andrew Hines. Richard Chenowith was sheriff.

There is a variety of soils in Jefferson county, some quite poor and some as fine as can be found in the State, ranging in price from \$10 to \$1,000 per acre, owing to quality and location. Almost all the land within six miles of Louisville is devoted to market gardening, and Jefferson county likely produces more of what is known as second crop potatoes than are produced in any other section in the United States. Enormous quantities of main crop potatoes (or first crop), onion seed, onion sets and onions are grown extensively throughout the county. Jefferson county stands second in the United States in the production of onion sets. The territory lying from eight to fourteen miles from the city is largely devoted to fruit growing and truck gardening. The small fruit industry is very extensive and no place in the world raises finer berries than those grown in Middletown, Jeffersontown and Fern Creek region. Strawberries are grown at Fern Creek in 1899 and exhibited in Louisville, seven of which would fill a quart box. Farming proper is carried on quite extensively in portions of the county, but the whole county is rapidly being occupied by fruit-growers and truck gardeners.

The people have splendid facilities for transportation of their products in every direction, as there are no less than ten great railroads centering in Louisville, the county seat of the county. There has also been built the Louisville, Anchorage & Pewee Valley Electric railway. The Louisville Street Railway Co. has built five electric lines out into the county in as many directions, penetrating the county for a distance of from eight to twelve miles. And, in addition to the railroads, they have the Ohio river. The water power on the falls at Louisville is now attracting the attention of capitalists and a scheme is on foot to utilize the same. There are a number of turnpikes in the county which have been built and operated as toll roads which are now free. The militia system of working the county roads was abandoned years ago and all roads are worked by taxation, and more attention is given each year to macadam, and most of the county roads are now piked and may properly be called permanent roads; roads where the proper attention has been given to drainage and then crowned with crushed limestone rock are the best, and the road is one that can be depended upon at all times. All important public

roads in the county are turnpikes. Timber is becoming very scarce, and remains only in most part on the rough and glady parts of the county. It is now mostly marketed in the log. The timber growth of the county has been mainly oak, poplar, walnut, hickory, ash, elm, maple and beech. There are several excellent quarries of building stone and quite a numbr of brick and tile works. There are in the southwestern part of the county an abundance of the elements for the manufacture of Portland cement, which is now being extensively manufactured. Much capital is invested. Perhaps the most noted mineral water in the county is found near Floyd's Fork, one mile below Fisherville, and the place is becoming quite popular as a health resort. Natural gas has been found in good quantity in the southwestern part of the county, also at Jeffersontown. Farm labor is largely employed and wages average about \$20 per month with board, or \$1.25 per day without board. Laborers are both white and black.

In Jefferson county are numerous relics of the pioneer period. At Mulberry Hill, on the Poplar Level road, stands the two-story double log house, built in 1784 by John Clark, the father of Gen. George Rogers Clark, and at Locust Grove on the Ohio may be seen the old-style solid brick mansion house built by Col. William Croghan in 1709. In the family graveyard here the remains of General Clark reposed from 1818 to 1869, when they were reinterred in Cave Hill Cemetery. On Beargrass creek are the sites of six original forts: Spring, Floyd's Dutch, Sturgis, Sullivan's and Linn's, which sheltered so many pioneers from the Indians, and where lie in unknown graves the remains of men and women who helped to lay the foundation of Kentucky. On the bank of Longrun, a branch of Floyd's Fork, stood Hugh's station, where the grandfather of President Lincoln was killed in 1788, and on the same stream was routed the little army of Colonel Floyd, who went to the relief of Boone's Station in 1781. On Chenoweth's Run yet stands the stone spring house in which the survivors of the massacre of the Chenoweth family took refuge in 1789.

Jefferson county is situated in the Fifth Congressional, Fourth Appellate, Thirteenth Judicial, Thirty-sixth, Thirty-seventh and Thirty-eighth Senatorial, Forty-fourth, Forty-fifth, Forty-sixth, Forty-seventh, Forty-eighth, Forty-ninth, Fiftieth and Fifty-first Legislative Districts.

JESSAMINE COUNTY.

(Revised 1907 by L. L. Wilhoit.)

Situated in the Bluegrass region, which has been so appropriately called "the garden spot of the world," is Jessamine, one of the most prosperous counties in the Commonwealth. It takes its name from a picturesque stream which traverses almost the entire length of the county. The creek was named for Jessamine Douglas, a beautiful girl, who in the latter part of the Eighteenth Century, met a tragic death on the banks of the stream at the hands of an Indian.

The county is largely agricultural, though stock raising is a profitable industry. Hemp and tobacco are the principal products, but wheat, corn and other staples are extensively cultivated.

Bounded on three sides by the Kentucky River, crossed by two railroads and containing 200 miles of free turnpikes, which are kept in excellent condition by the county, traveling facilities are splendid. The interurban line which will connect Nicholasville with Lexington in the near future will be another means of ingress and egress.

Two telephone companies, the Home and Cumberland, with main offices in Nicholasville, the county seat, provide quick communication with all parts of the county, while six rural routes, four from Nicholasville and two from Wilmore, make prompt mail delivery possible.

Nicholasville, founded in 1798 and named for Col. George Nicholas, is centrally located. Perhaps no town in the State has made more rapid strides in progress and development in the past two years than has this beautiful little city. It forms the junction of the Cincinnati, New Orleans & Texas Pacific, the greatest railroad in the South, and the Louisville & Atlantic, which not only affords accessibility to the coal fields of Eastern Kentucky, but also connects with the great Western trunk lines.

For years an agricultural center, Nicholasville is becoming a commercial center as well. The first impression received by strangers entering the town is the condition of the sidewalks and streets, and the general air of thrift and prosperity which is manifest. Twenty thousand square feet of concrete sidewalks have been laid within the past six months. Twenty-eight new buildings, aggregating a cost of \$100,000, have been erected, notably among them the Withers Memorial Library and the Christian Church. A stock company recently incorporated with a capital stock of \$6,000 is erecting a creamery. Another new industry, and one that has added greatly

to the commercial interest, is the plant of the Jessamine Barytes Company, an immense mill, located on the L. & A. R. R., and several mines operating in this and adjoining counties, give employment to a large number of men. The electric light plant, owned and operated by the city, has recently been enlarged. A corporation supplies the water, while a volunteer fire department furnishes ample protection against fire. The population numbers 4,000, and the municipal tax rate is \$1.25.

There are six white churches within the city limits—two Methodists, a Presbyterian, a Baptist, a Christian, a Catholic and an Episcopalian Mission. The negroes have three houses of worship—a Christian, Baptist and Methodist and Methodist. Of the schools, Jessamine Institute is a college for girls well known throughout the South. The High School ranks with the best in the State, and Threlkeld Select School is a successful preparatory school for boys. Among the industries of the town are an ice and cold storage plant, a steam laundry, a saw mill and two retail lumber firms, a hemp factory, a tobacco factory, a flour mill, two telephone exchanges, two newspapers, a first-class hotel, several livery stables and a number of business firms, all doing a thriving business. The Withers Memorial Library, with 3,000 volumes and the leading newspapers and periodicals on its shelves, is an inviting retreat for students and book lovers.

Wilmore, the second town in size in the county, is situated on the C. N. O. & T. P. R. R., six miles south of Nicholasville, and is an enterprising place. Asbury College, which has an enrollment of 300 students, is located there, while a large flour mill, a creamery and other industries make it one of the most business-like little towns in the State.

Jessamine county is not only improving in a commercial way, but in a moral way as well. The local option election resulted in a victory for the temperance forces, and saloons have been banished. A number of our Sunday Schools have organized and the Sunday closing law is rigidly enforced.

From a commercial, a moral and an educational standpoint, Jessamine is one of the most desirable counties in the State as a place of residence. Last, but by no means least, the people are social, hospitable and generous, extending a cordial welcome to all persons who are worthy of respect and attention.

This county is in the Seventh Congressional, Fifth Appellate, Twenty-fifth Judicial, Twenty-second Senatorial and Sixty-third Legislative Districts.

JOHNSON COUNTY.

Johnson county, situated in the eastern part of Kentucky, was named for Col. Richard M. Johnson, Vice-President of the United States under Martin Van Buren, in 1843. Paintsville, the county seat and future metropolis of the Big Sandy valley, is located on Paint creek, about one mile from the West Fork of the Big Sandy river and better known as the Levisa Fork. The county is bounded on the north by Morgan and Lawrence, on the east by Martin on the south by Floyd and on the west by Magoffin. It is in the Tenth Congressional, Seventh Appellate, Twenty-fourth Judicial, Thirty-third Senatorial and Ninety-sixth Legislative Districts, represented at present by the Hon. F. A. Hopkins, Judge C. E. O'Rear, Judge A. J. Kirk, Senator John Combs and Hon. Fred A. Vaughan, respectively.

The soil of Johnson county, underlaid with an excellent quality of clay, is regarded as the best in Eastern Kentucky, and is especially adapted to the production of tomatoes and fruits of rare varieties, yielding bountifully along the numerous streams in bottom lands. Blackberries and raspberries grow wild in abundance and need no care or cultivation, but, owing to the growing necessities of agriculturists, this poor man's inexpensive luxury is rapidly disappearing. Horticultural, as well as agricultural interests, have not as yet attracted much attention.

The Big Sandy river is the principal waterway and flows through the entire length of the county, north and south, receiving from the east, six miles below Prestonsburg, the waters of John's creek; from the west, one mile east of Paintsville, the waters of Paint creek, and six miles below Paintsville, on the west, the waters of Tom's creek, which, together with numerous other small streams, constitute an ideal water system. The Big Sandy river is navigable about half the year, during which time large steamers ply between Catlettsburg and points above Pikeville, a distance of about one hundred and thirty miles. The river packet business, however, has been crippled to a great extent by the extension of the Chesapeake & Ohio railroad from Whitehouse, for many years its terminus, to the Forks of Elkhorn, several miles above Pikeville, and the failure of the Federal Congress to appropriate money sufficient to lock

and dam the river. The road running parallel with the river, extends through the entire eastern part of the county.

Until railroad transportation was an actual reality, in the fall of 1904, great quantities of valuable timber were cut and carried to foreign markets by water, but at present the supply is hardly equal to the demand for home consumption, and yet vast quantities of poplar, ash, hickory, beech, oak, pine, locust, chestnut and sycamore are found in less convenient places for marketable demands.

Johnson county is in the heart of the Eastern Kentucky coal fields, and operations are now in effect yielding vast quantities of the highest grade of bituminous and cannel coal to foreign demands. An excellent quality of iron ore is found in some portions of the county, and it is believed that "Swift's silver mine" is located somewhere within her boundaries, but all search has so far been unfruitful.

The agricultural products amount to but little except for home consumption. It is said that Big Sandy sorghum, to which a great deal of attention is paid in Johnson county, is the best which reaches foreign market.

Johnson county is probably as well supplied with good churches and common schools as any county in the State. In Paintsville four different religious denominations are well represented by prosperous churches, the M. E. Church, M. E. Church, South, Christian and Baptist. The Sandy Valley Seminary, one of the best of its kind in the State, is located in Paintsville and has a remarkable attendance. To this institution John C. C. Mayo, of Paintsville, donated the ground on which it is built, and \$10,000. The school is owned jointly by the two M. E. Churches.

Until recently Johnson county could be spoken of as a county where little is plenty, much is not needed and want is unknown, but a new era exists and the bud of prosperity, which has for so many years struggled against uncertain atmospheres, has burst into blooming beauty and excellence. Her people are hospitable and kindly disposed towards strangers. Feuds are unknown and the laws are admirably executed. Local option prevails over the entire county and "blind tigers" are not to be found anywhere. The officials of the county believe in the economic administration of government, commensurate, however, with the growing necessities of the county.

KENTON COUNTY.

(Revised 1907 by B. F. McGlasson.)

Kenton county, one among the smallest counties in the State, was formed out of Campbell county in the year 1840. It contains ninety-seven thousand and two hundred and eighty acres of land, and was named for that grand old Indian fighter and pioneer Simon Kenton. The first actual white settlers of the county, it is claimed, was a man by the name of Rittenhouse, who with his family, settled on the waters of Bank Lick in the year 1793. The first white visitors as far as are known, was a company who crossed the Licking river at its mouth in 1751 and said to be the first whites known on its waters. The mouth of the Licking river was a great rendezvous of Kentucky troops in expeditions against the Ohio Indians. Kenton county is a very narrow county, being only six to twelve miles wide and twenty-five miles long. The K. C. division of the L. & N. R. R. runs the full length of it on the east, the Cincinnati Southern on the west and the Louisville Short Line about twenty miles from northeast to southwest through the county. Kenton county has for its boundary on the north the Ohio river, on the east the Licking river, on the south Pendleton and Grant counties and on the west Boone county. There are no rivers running through the county, but there are numerous creeks that afford a good supply of clear water for stock purposes. The county seat of Kenton is Independence, a village of two hundred fifty inhabitants, though there are virtually two county seats, two court houses and two jails. The Circuit Clerk, County Clerk, Jailer and Sheriff all appoint deputies, that take charge of the business at Independence, which includes the first district. The balance is transacted at Covington. Independence has good schools, churches, stores, blacksmith shop and a splendid creamery now in operation. The county has just completed a modern Infirmary near Rosedale, purchasing forty-seven acres of ground for sixteen hundred dollars. One building cost one hundred and six thousand, six hundred and eighty-seven dollars. It contains one hundred and seventeen rooms. There is a separate building for colored people connected with main building by inclosed and covered passage. The furnishing cost twelve hundred dollars. The cost of supporting the inmates per month is about nine dollars each, including salaries of

Seventeenth Biennial Report Bureau of Agriculture. 489

Superintendent, Matron, Nurses, Cook, etc. It is kept in first class order.

Kenton county has two hundred and eighty miles of good macadamized roads that form a complete net work throughout the county, enabling the farmers to haul their produce to market at any time of the year. Two hundred and forty miles of said pikes are free, forty miles are toll roads, with a moderately low rate. There is but little bottom land on the Ohio river, but it is very rich, while its uplands is rolling and produce the very best quality of white burley tobacco. The finest truck gardens in the State are located in the vicinity of Covington, while corn, oats, wheat meadows and potatoes do well. Blue-grass grows abundantly. Fruits of all kinds, such as peaches, pears, plums and berries of every description, are grown for the Cincinnati and Covington markets.

Dairying is carried on extensively and some of the best herds of dairy cows in the State furnish milk and butter to the adjacent cities. The farmers of the county seem to have adopted improved methods of farming by crop rotation and fertilizing as will be shown by the crops of 1906. 493,200 lbs. of tobacco, 2,948 tons of hay and 72,649 bushels of corn, besides a vast amount of potatoes, tomatoes, melons and pickles, raised and marketed during the year. The county has very little timber left excepting black locust, which affords an abundant supply of posts for fencing and with the present prices of wire fencing can be done very cheap. Land near the city of Covington is very high, ranging from one hundred and fifty dollars to five hundred dollars per acre, while the farms farther back range from thirty-five to sixty dollars per acre. Farm labor is very high. It is impossible to get the help desired to carry on farming successfully. The hands to be had are very poor and demand from one and a half to two dollars per day. Besides the great number of post offices in the county which are, Atwood, Banklick, Buffington, Covington, Crescent Springs, Erlanger, Fishburg, Grant's Bend, Independence, Kenton, Key West, Ludlow, Latonia, Morgansville, Mullinsville, Morningview, Nicholson, Piner, Pruett, Scott, Sanfordtown, Staffordsville and Visalia, it has rural free delivery throughout the county, delivering mail to nearly every door. Covington is the largest city in the county and second largest in the State. It is situated at the confluence of the Ohio and Licking rivers, and has a population of 50,000. It was established by an act of the legislature

in 1815 and named for Gen. Covington. The Custom House and Post Office building is centrally located in the business part of the city, and cost \$250,000. Covington is connected with Cincinnati by two splendid bridges, there is also one over Licking river connecting it with Newport. Covington also has a splendid court house, with court rooms for city and county courts, and all city and county offices. It has a number of flourishing banks, about thirty churches (white and colored) and is noted for its excellent school system, and its beautiful wide regularly laid out streets. It has good gas and water systems and splendid street car service to Fountain Square, Cincinnati.

Ludlow is situated a short distance below Covington on the Ohio river, and is the second city in size in the county. Its streets are wide, nicely laid out, ornamented with shade trees and paved with vitriolized brick, giving them a beautiful appearance. The Pullman and Cincinnati Southern R. R. shops are located in Ludlow and employ about one thousand men. The Pittsburg coal elevator is located on the river bank, and supplies Ludlow and the adjacent counties with coal. Ludlow has a splendid school building, good high school system, having a ten months school every year, two flourishing banks, numerous stores and other business houses. Also has electric light and water system, fine street car service with five cent fare through West Covington, and Covington to Fountain Square, Cincinnati, and churches representing all the leading denominations. It has a population of 4,500 and very little bonded debt. The Ludlow Lagoon, one of the greatest pleasure resorts in northern Kentucky is situated at the edge of the town.

Erlanger is situated on the Cincinnati Southern R. R. and the Covington and Lexington turnpike, seven and one-half miles from Covington, has a population of 1000. Sustains high school ten months in the year. One flourishing bank and other business houses. Erlanger is situated on a high plateau, above all fogs and malaria and is neatly laid out, and when the Covington traction line reaches it, will become one of the most popular suburbs of the three cities. Rosedale, Latonia, Mullinsville, and others are flourishing towns in the county. Kenton county is situated in the Sixth Congressional, Sixth Appellate, Sixteenth Judicial, Twenty-fourth Senatorial, and contains the eightieth, eighty-first and eighty-second legislative districts.

KNOTT COUNTY.

Revised, 1907, by Judge L. C. Stone.

Knott county was formed in 1884, and named in honor of Governor Knott. It was formed out of parts of Perry, Floyd, Letcher and Breathitt counties. It is situated in the extreme eastern portion of the State, and is bounded on the north by Breathitt and Floyd counties, on the east by Floyd, on the south by Letcher, and on the west by Perry and Breathitt. Its area is probably three hundred square miles or nearly so.

That section of the county formed from Floyd is drained by the Big Sandy river and its tributaries, and the portion taken from the counties of Perry, Letcher and Breathitt is drained by the north forks of the Kentucky river and its tributaries. The character of soil is rich sandy loam, and the bottom lands along the many streams which traverse the county are peculiarly productive, raising magnificent corn, oats and vegetables. Wheat is grown on the uplands and also fine pastures are produced there. Minerals, iron and coal, also oil and gas, are known to exist in the county, but have not been fully developed, though two paying oil wells are being pumped. The county is in the oil and gas belt and on the line of the fine producing oil and gas wells on Beaver creek in Floyd county, which creek also flows through Knott county and the best wells in Floyd on that creek are but three miles from the county line.

We have abundant forest of the finest and most valuable hardwood timber. The splendid poplar timber has about all been bought up and now is in the hands of a timber company, but other good timbered land in great quantities can be bought at an average price of \$10 to \$20 per acre.

Diversified farming is not engaged in further than to meet domestic uses. There are no navigable streams in Knott county, about forty miles, however, being available to float or raft logs. We have no water courses capable of being navigable by a system of locks and dams. There are no turnpikes in the county, the public roads being the country dirt roads and are kept in repair—bad repair—by the system provided for under the statutes of the State, being under the supervision of over-

seers or surveyors appointed by the county court. There are no railroads in the county; about forty miles of a proposed road through the county were surveyed some years ago, but nothing has come of it further. Improved farm lands range in price from \$10 to \$20 per acre, and unimproved can be bought for \$10. The character of labor employed in the county is mostly native white farm hands getting \$40 a month, and hands for timbering from \$1.50 to \$2 per day.

There is one good college in the county, situated at Hindman, known as Hindman College; other educational facilities are afforded solely through the common schools of the county, which are in good condition and well attended. While immigration to the county has not been appreciably large, there has been a steady increase in the population of the county.

Hindman, the county seat of Knott county, a nice little village, named after Lieutenant-Governor James R. Hindman, is situated a little southwest of the center of the county on Troublesome creek.

Knott county is situated in the Tenth Congressional, Seventh Appellate, Twenty-fourth Judicial, Twenty-third Senatorial and Ninety-seventh Legislative Districts.

KNOX COUNTY.

(Revised, 1907, by F. D. Sampson.)

Geographically, Knox county is well up in the mountains of southeastern Kentucky. Socially, she is on the borderland between the mountain country and the bluegrass. Intellectually, she is the peer of the best counties in the State; this is evidently due to the fact that the original settlers of this county were made up of an unusually large number of the better class of Virginian people, who, in their turn, were drawn from the better class of English people who settled Virginia.

Knox (named in honor of Major-General Henry Knox, of Revolutionary fame) became a county in 1799, being in that year carved out of Lincoln, one of the largest counties then composing the State of Kentucky. Knox has since lost enough of her territory to make up the whole of the latter established counties of Bell and Harlan, large parts of Whitley and Laurel, yet it is a large county. The village of Flat Lick in the southeastern part of the county is the oldest

settlement in Kentucky, having been peopled by the first of the emigrants from Virginia, who came through Cumberland Gap; the first house ever built in Kentucky was erected by Dr. Walker within the present limits of Knox, on the Cumberland river, about three miles below Barbourville.

Knox lies on both sides of the divide separating the waters of the Kentucky river from those of the Cumberland, at least nine-tenths of the county lying on the latter waters. The topography of almost the whole county is a series of mountain ridges winding in all sorts of fantastic curves, and separated by long, narrow and winding creek valleys. More than three-fourths of the territory is steep mountain sides thickly set with forests.

The soil is disintegrated sandstone (in many places micaceous), except new ground where the timber has lately been cleared away, which is loose, black soil, very productive. Agriculturally, Knox produces enough to feed her own people, no more; but under careful cultivation, fruits might be produced in almost endless quantities, especially on the high lands on the south side of the Cumberland river. Wool growing is one of the principal sources of the farmer's income, which might be greatly extended by choosing the proper grasses to clothe such of the mountain sides as have been cleared.

The forests have been stripped of the larger part of the more readily marketable timber, such as poplar and walnut, but a vast amount of timber is still left, such as oak, in all its varieties (white oak, black oak, chestnut oak, Spanish oak, post oak, spotted oak, etc.), hickory, beech, chestnut, ash, dogwood, sourwood, gum, maple, sugar tree, elm, sycamore, lynn, ironwood, birch, cucumber, buckeye, service, willow, redbud, cedar, holly, etc. The chestnut oak (the tanbark tree) furnishes the Knox county land owners with, perhaps, his principal source of revenue so far as ready money is concerned. Thousands of cords of this bark are annually shipped, so much that in a few years the supply will be exhausted. But the great resources of Knox county are in her coal and oil fields, in which she may be fairly said to be unsurpassed by any county in the State. All grades of bituminous and cannel coals are found in this county in great profusion. The writer has gone into some of the openings and measured cannel coal veins forty-eight inches in thickness, and from the height of the mountain above the opening the amount of coal in these veins evidently is practically inexhaustible. Nearly every farmer has a vein of coal opened on his place, which he works to supply his own fuel.

About 1890 the North Jellico Coal Company began to mine coal near Gray's Station, in the southwestern part of Knox county, but the operations were small for several years. Now, however, that concern has two operations in the county, one at Bertha, and the other at Wilton, at each of which is mined from twenty to thirty railroad tons, daily of high grade Jellico coal, and used for both domestic and steam purposes. This Jellico seam is about four feet thick and underlies the greater portion of the upland of the county.

At the present time there are more than forty large and prosperous coal operators located in different sections of Knox county, and thousands of men are engaged in the mining and loading of coal the year round. Mining is now the chief occupation of the people, there being a greater number engaged in it than farming, but recently the sole employment. The principal stratas of coal of the county are the Blue Gem, a very fine domestic coal, the Jellico, the Ely, the Dean, the Brush Creek Vanderpool and the Stinking Creek Cannel, all of which are located at different heights on the mountain and in seams of size to be of great commercial value. There is no part of Knox county in which coal is not found in large deposits. The development is just now beginning, and at the rate it is now going it will not be ten years until the whole county will be one large mining plant with millions of capital and thousands of employees.

Several oil wells have been lately bored, in nearly all of which petroleum has been found more or less abundantly. Many fine producing wells have been developed about Barbourville. In nearly all parts of the county a bright colored, greasy fluid appears on the surface, indicating the existence of fluid minerals beneath the surface. Sulphur springs are numerous throughout the county, while bored wells generally strike water impregnated with iron.

A number of small mineral springs are used to a small extent as watering places or summer resorts.

The rock, both slate and sandstone, lies in regular level strata composing as perfect a formation as can be found anywhere.

All of the Cumberland river in Knox, by the installation of not more than two locks, would be navigable.

Up to 1888 Knox county was entirely without railroads, but now the Cumberland Valley branch of the Louisville & Nashville Railroad runs through the county from north to south, while the Cumberland Division of the Southern enters the county from the southeast in its

line from Jellico and extends to Artemus, four miles from Barbourville, and will no doubt be extended within the next few months into other coal fields in the county.

Most of the coal produced in Knox is sold in the Southern markets at prices much in excess of that paid along the Ohio river for Pittsburg coal, and there is a constantly increasing demand for the output with consequent increase of price.

The stave business of the county for several years past has been enormous

There are two National banks in Barbourville, a street railway, electric light plant, natural gas in abundance. The gas is used for both light and heat and at the price charged by the company is very inexpensive. Union College, the principal educational institution of the M. E. Church of Kentucky is located here, and has just completed two very handsome school buildings, making one of the best school plants in Kentucky. The Baptist Institute, also located here, is a growing and prosperous institution.

Knox county is in the Sixty-ninth Legislative, Seventeenth Senatorial, Eleventh Congressional, and Twenty-seventh Judicial and Fifth Appellate Districts.

LARUE COUNTY.

Larue county was once a portion of Hardin county, and was cut off from the mother county by an act of the Legislature in 1842, Larue county is below the average in size, but, in point of fertility of soil, the enterprise of its citizens and its educational progress, it is above the average of Kentucky counties.

The principal crops of Larue county are corn, wheat, hay and tobacco. Through the county runs three branches of Nolin creek, and the farms along all of these branches are highly productive, as are also those along the Rolling Fork river, which forms the eastern boundary of our county, separating it from Nelson county. The remainder of our farm lands are comparatively thin, and a few years ago, were worth only a few dollars an acre, but with the use of fertilizers they have become good wheat-producing farms, and their value has greatly increased. Horses, cattle, mules and sheep are raised extensively, and large numbers of cattle and mules are fed in our county.

Larue county has access to two railroads, which gives us as low freight rates as are enjoyed anywhere. The Illinois Central has a branch from Cecilian Junction with its terminus at Hodgenville, the county seat. The main stem of the Louisville & Nashville runs through the west end of the county, and the Knoxville branch crosses the east end. The Bardstown and Green River turnpike runs through the county from north to south, and a good pike is maintained from Hodgenville to Buffalo. In the past the dirt roads of the county have not been maintained in as good order as was possible, but the fiscal court has given the matter attention, and improvements are being made with the promise that in a year or two vast improvements will be made, as the property owners seem disposed to meet the expense that better roads demand.

The factories of the county consist of the J. M. Atherton & Co., at Athertonville, now owned by the Kentucky Distilleries and Warehouse Co. (the largest distillers in the State), and three or four other small distilleries. The Hodgenville Manufacturing Co., which employs fifty hands and turns out large quantities of barrels, hoops, staves, etc., and the Daugherty Bros. planing mill are located at Hodgenville. The county has three prosperous banks—the Larue County Deposit Bank and the Farmers' National Bank, at Hodgenville and the Buffalo Savings Bank, of Buffalo. Larue county has two fine schools, Kenyon College, at Hodgenville, and East Lynn College, at Buffalo, with district schools that have been greatly improved in recent years.

Farm lands in the county vary in price from ten to sixty dollars an acre. The hill lands are of little value, except those that have timber on them.

While no oil wells have been bored in the county, there is strong indications of oil, and wells will be bored the coming year. Natural gas has been discovered in the east end of the county, along the Muldraugh's hills. In fact, a well was bored only ninety feet deep and a strong flow of gas resulted, which gas has been flowing for fifteen months uninterruptedly, and of about sixty pounds of pressure.

Larue county contains the farm that is now noted as being the birthplace of Abraham Lincoln. It is situated three miles south of Hodgenville, and is now the property of New York capitalists. The cabin in which Lincoln was born has been moved to New York and is in Central Park, though it has been promised that the cabin would

be finally returned to the old farm. It is hoped by our citizens that the government will some day make a national park of the farm. Such a measure was once introduced in Congress, but it was squeezed out of notice by other legislation.

Larue county is situated in the Fourth Congressional, Third Appellate, Tenth Judicial, Thirteenth Senatorial and Thirty-second Legislative Districts.

LAUREL COUNTY.

(Revised 1907 by R. M. Jackson.)

Laurel county, formed in 1826, in the southeastern part of the State, is bounded by the counties of Rockcastle, Jackson, Clay, Whitley, Knox and Pulaski. The name was taken from the Laurel river, which, in turn, has been called for the rhododendron, so luxuriant in growth all over the county. The river empties into the Rockcastle, which with its tributaries waters and drains the soil. Much of the land yields little, because of the neglect in fertilization, but in the more carefully cultivated sections, the crops are surprisingly good for a hilly country. Tobacco has never been cultivated to any extent. Corn, wheat and all vegetables are the usual products. Splendid apples, plums and grapes abound.

The Swiss colonies, especially Bernstadt and Strassburg, show by their farms the possibility of all the land in the county. Many of these homes were located on the most unproductive soil, but by persistent labor of the owners, excellent crops, fruits and vegetables are grown. At present, it is somewhat difficult to obtain farms near to the town, because of the demand of country homes with the advantages of a good school. In the schools five or six miles from town (London), excellent land may be obtained reasonably, which will well repay cultivation. For this reason, immigrants, desirous of a farm, would find abundant opportunity here.

This county yields perhaps more than her quota of cattle, hogs and sheep. Buyers from the bluegrass can be seen every day. The milk cows are of excellent stock; the mules, also, are worthy of exportation.

Perhaps the most remunerative occupation is coal mining; exclusive fields are in operation at Altamont, East Bernstadt, Pittsburg

and Lily, these points being on the Louisville & Nashville railroad. They give employment to hundreds of men, who find comfortable homes in the vicinity. However, there are many undeveloped veins some distance from the railroad, and when branch roads are multiplied the coal and timber will repay the capitalist. One of the most urgent needs of the county is better roads; there are no pikes, save in the towns, and the constant hauling of timber to London and East Bernstadt from the more distant counties in winter makes the traveling deplorable. The county taxes are \$1.50 for poll, and 50 cents per \$100 for the general expense; however, this increase of 50 cents on the former and 25 cents on the latter was for the purpose of a new jail, and will soon be removed. It is thought that the taxes will be lowered this year. The new jail is completed, a commodious brick structure, with excellent rooms, bright, airy and healthful, supplied with electric lights, water and heating arrangements. It would be an honor to a much richer county.

The county seat is at London, an enterprising town of 1,700 inhabitants. It boasts of an excellent court house, two National banks, a manufacturing company, an electric light plant, telephone service, good hotels, various business houses, an infirmary, churches and beautiful homes.

The Sue Bennett Memorial School, endowed by the women of the Southern Methodist church, has imposing buildings, a patronage of more than three hundred and a faculty of twelve. Besides an excellent academic course leading a student to enter the junior class of State College, there is some work in manual training, and cooking, sewing and carpentering are taught. A farm offers practical experience, a laundry, soon to be erected, will give opportunities of self-support. The county schools are for only six months, as provided by the State. However, London has initiated a graded school through the nine months, and is erecting a beautiful gray brick building on the old Seminary property.

Before the civil war, this seminary was built and equipped by State appropriation, but during the struggle, it was used as a hospital for the Union forces. A cemetery was established on an opposite hill. The battle of Wild Cat, October, 1861, fought near Hazel Patch, between the soldiers of Col. Garrard and Gen. Zolicoffer, a memorable victory for the Union forces in driving the Confederates back to Cumberland Gap and enabling the Unionists to winter in Bell county,

made this necessary. Since the State road from the Bluegrass to Cumberland Gap passed through Laurel, there was exceeding devastation, for which practically nothing was ever paid.

Laurel county is situated in the Eleventh Congressional, Fifth Appellate, Twenty-seventh Judicial and Seventy-first Legislative Districts.

LAWRENCE COUNTY.

(Revised 1907 by Col. Jay Northup.)

Lawrence county was formed in 1821, from the portions of Floyd and Greenup counties, the dividing lines of those counties at the time being Main street of Louisa. It is located in the northeastern part of the State, bounded on the south by the counties of Martin and Johnson; on the north by the counties of Boyd and Carter; on the east by West Virginia, and on the west by Elliott and Morgan counties.

The surface of the county is largely hilly and broken, but not mountainous. There is, however, a large acreage of bottom land, owing to the numerous water courses.

The county is well watered. The Big Sandy river flows along its eastern boundary from its northern limit to Louisa, where it forks. The main fork known as the Louisa Fork, flows through the county to the Johnson county line, the Tug Fork from Louisa to the Martin county line and is the dividing line between the county and West Virginia, between those points.

The river and its forks are navigable for steamboats a large part of the year. There are now three locks and dams, completed by the general government, below the forks. One of them near Louisa giving six foot water from eight miles above Louisa to Catlettsburg, a total distance of thirty-three miles. One lock and dam in each stream above Louisa are now completed.

The principal streams flowing to the Big Sandy and its tributaries, and through and in the county, are Blaine, Bear, Rove, Rush, Two Mile, Lick, Three Mile, Griffith's Contrary, George's, Nat's, Donathan and Rock Castle creek. None of them are navigable for steamboats, and only one (Blaine) has any water falls, which at the thriving little town of Fallsburg, has a water power running only

500 *Seventeenth Biennial Report Bureau of Agriculture.*

a saw mill and grist mill, but which, if properly harnessed, would furnish power to run dynamos of sufficient power to run all the railway trains and all the machinery in the valley of Big Sandy.

The soil in its virgin state, is fertile and the bottom lands still remain so, but the hill lands, owing to improper cultivation, have become badly worn.

All kinds of crops that can be grown successfully in the Central States can be grown here, and with as good returns, provided they receive the same care and attention as elsewhere. The principal crops are corn, oats, wheat, potatoes, sorghum, tobacco, apples, peaches, pears, plums, and small fruits, some attention being given of late to the cow peas and tufa bean not only as a pay crop, but as an improver of the soil. The sowing of grass seed has increased five hundred fold during the past five years, of which red clover, mammoth and alsike take the lead, with orchard grass, bluegrass, timothy, tall meadow, oat grass, Italian rye grass, all of which have been found well adapted to our soils. Crimson clover has not been a success. The adaptability of our lands for grazing purposes has stimulated the extraordinary sowing of grass seed. From actual experiments it has been demonstrated that alfalfa can be successfully grown in this county. The northwestern portion of the county embraces the head waters of the east fork of Little Sandy, a large portion of Bear creek and a number of the tributaries of Blaine, has a large number of farmers who graze from one to ten hundred cattle each year and most of them have been very successful. This section is known as the "Bluegrass" section of the valley.

One silo was built in the county and that one of about four hundred tons capacity and which has proven a success for the four years it has been used, a success, not only from a standpoint of feed, but of economy in harvesting of crops in the dry weather of September instead of the wet cold weather of December.

The timber suitable for making first-class lumber is being exhausted at a rapid rate, but we are to be congratulated that nearly all of it at the present time is being worked up into lumber instead of being floated to the market in saw logs. There has never been a time when there were so many mills in operation in the county and it looks as though what has been considered worthless would in the end, nearly equal in value the choice timber, viz.: Hickory and dogwood poles, none over two inches in diameter, are shipped for manufacture into smoking pipes. And sour wood and maple sprouts

not over one-half inch in diameter for stems for same. The removal of so much of the smaller growth for which pay is obtained, makes the clearing and preparing our hill lands for grass much cheaper. The average value of timber on lands at the present time is ten to fifteen dollars per acre, if within reasonable distance of the river or railroad.

There is an abundance of good cannel and bituminous coal for domestic and steam purposes, and now that the Big Sandy river is certain to be improved we have every reason to believe that many new mines will be opened in the near future.

There are also large quantities of iron ore, much of it lying near the railroad and river. The quality is excellent, running from thirty-five to sixty per cent metallic iron. It does not, however, lie in such large veins as to make the mining of it cheap. There are also large quantities of fireclay available.

Oil so far found is at the depth of about three hundred and fifty feet, and is pronounced one of the best lubricating oils ever found, having a specific gravity of twenty to twenty-two degrees and equal to the best sperm oil and in point of endurance two and one-half times greater. We have no building stones, but our sandstone, much of which is of a superior quality, free from impurities.

There has never been any gas well found yet of sufficient rock pressure to make them commercially valuable. The piping of natural gas from the wells in Martin county, through the whole length of our county, into Louisa, Catlettsburg and Ashland, in our own State, and Huntington, W. Va., and Ironton, Ohio, has been of inestimable value, and assures them of an opportunity of the cheapest of fuels to assist them in the development of our resources, and capitalists are becoming numerous in their visits to our country, looking for opportunities to invest and we can confidently hope that the resources of this and adjoining counties have been so fully explored as to satisfy every one of their prominence, as to warrant rapid development.

There is one first-class flouring mill in the county, and now that we have the fuel brought to our doors, we expect there will be a great increase in manufacturing industries, especially in wood working.

There are two railroads in the county, one of which is the Big Sandy division of the Chesapeake & Ohio, running through the entire length of its eastern boundary and furnishing good transportation facilities for the coal mines at Peach Orchard and Torch-

502 *Seventeenth Biennial Report Bureau of Agriculture.*

light and the numerous saw mills which are now in operation and the cannel coal mines at White House and Eliza, in Johnson county. The other is the Eastern Kentucky, running into the western portion of the county as far as Webbville. The oil development going on about ten miles south warrants the expectation of the people of that section, that it will be soon extended to those fields. The C. & O has built an extension to breaks of river, passing through Johnson, Floyd and Pike counties, and is improving present line to make ready for immense coal and coke traffic. The present means of transportation and the general favorable outlook for the immediate development of part of our resources, is inducing capitalists to look favorably upon them, believing with our citizens that investments made in the near future must result in large pecuniary gain. A new coal mine is being opened five miles above Louisa, opposite Torchlight, by Louisa Coal Co.

There are no turnpikes or macadam roads in the county. There is a growing sentiment in the county in favor of good roads. The county owns a good road machine which is working to great satisfaction and by persistent effort we hope to see a steady improvement in our roads.

The labor of the county is largely white, for the most part good when properly directed, and improving each year. There need be no idle hands in this county at the present time, unless their owners so desire. Farm hands are scarce at thirteen dollars per month and board. Very ordinary hands can readily obtain that price. Where they board themselves, seventy-five cents per day for general work. Ordinary labor now \$1.50 and \$2.00 per day, and supply unequal to the demand. We feel that one of the reasons for the increased demands for labor is that our farmers by the purchase and use of improved farm machinery have thereby largely increased the acreage which is tilled. The largest increase in improved farm machinery for farm purposes has doubtless been in mowers and horse rakes.

There is one college in Louisa, and there is a great interest in the public schools being manifested and increasing every year. After the public schools close subscription schools are opened in most of the thickly settled districts.

The county now has a population exceeding twenty thousand.

Louisa is the county seat, situated on the eastern boundary of the State and on the Big Sandy river at the confluence of the Levisa

and Tug forks. It is a thriving town of a little over one thousand inhabitants. Has two Methodist and one Baptist church, and two Methodist and one Baptist church, for the colored population, one graded school of five rooms, besides the colored school.

Other thriving little villages at each of which are prosperous stores, good schools and postoffices, are: Buchanan, Busseyville, Charley, Failsburg, Glenwood, Lawmansville, Peach Orchard, Richardson, and Webbville. Other postoffices in the county are: Adams, Cherokee, Clifford, Cordell, Derfield, Estop, Gallup, George's Creek, Irad, Jean, Kinner, Madge, Martha, Olioville, Ossie, Patrick, Patter, Prosperity, Ratcliffe, Skaggs, Vessie, Walbridge, Wilbur and Torchlight.

Lawrence county is in the Ninth Congressional, Seventh Appellate, Thirty-second Judicial, Thirty-second Senatorial and Ninety-eighth Legislative Districts.

LEE COUNTY.

Revised 1907 by J. F. Sutton.

Lee County was formed in 1869, and named for Gen. Robert E. Lee. It is situated in the eastern part of the State, at the junction of the Three Forks of the Kentucky river, and is bounded on the north by Wolfe, on the east by Breathitt, on the south by Owsley, and on the west by Estill. The county is mountainous and is traversed by many streams. Besides the North, Middle and South Forks of the Kentucky river, and the main river, it contains many large creeks, which are used to some extent and could be largely used, as water power for various kinds of mill and factories. The Kentucky river is navigable to Beattyville for steamboats during six months in the year. The river and creek bottoms and corn land, of which there is a great deal, are very productive. Many river bottoms have been in corn for fifty years, consecutively, and produce on an average of one hundred bushels every year and the soil is as strong now as when it first went under the plow. The upland is thin, but loose and level and pleasant to cultivate. The soil has a clay foundation, which retains manure, fertilizers, etc., when once applied, so that intelligent farming is profitable. The soil is adapted to all the grains, grasses and other crops grown anywhere in Kentucky, but corn is almost the only crop grown in any quantities. The uplands

504 *Seventeenth Biennial Report Bureau of Agriculture.*

are wonderfully adapted to the orchard. Apples, peaches, pears, grapes and all the small fruits, berries and melons, grow to perfection when properly cultivated.

The demand for all farm products is greater than the supply, and prices are good.

About two-thirds of the area of the county is covered with timber, the best and most abundant for lumber being pine, oak and poplar, which reaches the market, some after being cut by the saw mills in this county, some by floating down the Kentucky river in the form of saw logs in rafts and some goes out by rail in the form of railroad ties, staves, tan bark, etc., etc.

About one-third of the county is limestone land. Four miles below Beattyville, the limestone comes to the surface, and the remainder of the county is underlaid with sandstone. Both classes of the stone are suitable for building purposes. In the northern part of the county is found a very rich ore, similar to the noted Red river iron ore, said to make the best car wheels in the world. In the same part of the county is found a very fine cannel coal, but neither has been developed. In all parts of the county abundant bituminous coal in veins of from three to four feet abounds, some of which veins are being successfully mined. Near the eastern border of the county abundant surface oil is found. There are several large tracts of fine timbered land in the county averaging some six thousand acres to the tract. In the coal fields, which have been developed, this land is worth about ten dollars per acre; in remote portions of the county the land is worth from \$3 to \$5 per acre.

No turnpike in the county. The dirt roads are maintained by the road militia, but the sentiment of the county now is in favor of building and maintaining roads by taxation. The greatest natural curiosities in the county are the saltpetre caves, and the bear tracks implanted in a huge flat rock in the northern part of the county, which seem to be of very ancient origin. The saltpetre caves at a very early day were extensively operated. What is called Big Ash Cave is a curiosity. It is filled to the depth of ten or twelve feet with ashes, which seem to be as strong as when first put there. No one has ever been able to go to the bottom on account of the strangulation produced by the ashes. The principal character of labor employed is miners and laborers at sawmills and in timber cutting. The average price of farm labor is about thirteen dollars per month. We have no foreign colonies,

but would offer great inducements to get them to locate here. The field is inviting for lumber mills of all kinds, chair, furniture, spoke, ax and broom factories.

The county seat is Beattyville, located immediately on the Kentucky river, at the junction of the North, South and Middle Forks. It was named for Samuel Beatty, the original founder, and owner of the land on which the town is built. There is a handsome court house, situated in a beautiful maple grove, surrounded by a neat iron fence. Population about 1,000. In addition to flourishing public schools all over the county, there is a graded school in Beattyville, also an academy under the supervision of the Episcopal church.

There is no bonded indebtedness in the county. The Lexington & Eastern railway traverses the northern and eastern parts of the county for a distance of twenty miles. The Beattyville & Cumberland Gap railroad connects the Lexington & Eastern with the county seat, a distance of six miles. The Louisville & Atlantic has purchased the Richmond, Nicholasville, Irvine & Beattyville railroad, and also the Beattyville & Cumberland Gap. The hiatus of thirty-five miles between these two roads is to be completed in the spring of 1900, which will connect Irvine and Beattyville by rail. The Louisville & Atlantic proposes to build its line on to the Atlantic seaboard. The United States Government has located locks and dams on the Kentucky river up to Beattyville. At present locks Nos. 8 and 9 are being built and as soon as three more locks are completed, Beattyville will have steamboat navigation all the year round. Lee county is an inviting field for capital and labor.

The Louisville & Atlantic Railway Co. is having a branch line of road constructed up the Duck Fork of Sturgeon Creek, which will when completed open up one of the richest coal fields in Eastern Kentucky. The Kentucky Coke & Coal Co. has already begun operations in the way of making entries and building houses, tipples, etc. The coal, which is of the finest quality, is 40 inches in thickness. The Duck Fork Land & Coal Co., is making extensive preparations for opening its holdings, the coal under which is said to be the thickest in that territory, and equal in quality to the other. Other companies will begin operations as soon as the branch road is completed.

The Beattyville & Proctor Bridge Co. have completed and in operation a toll bridge across the North fork of the Kentucky river, and have under construction another across the South fork river, which will be completed within a short time. The Fiscal court of this county has let

506 *Seventeenth Biennial Report Bureau of Agriculture.*

a contract to the Central States Bridge Company for the erection of a steel bridge across the Middle fork of the Kentucky river at St. Helens, which connects all parts of the county.

The roads are in very bad condition, but with the bridges completed it is to be hoped the people will take more interest in making and keeping the roads in repair. There is, however, a proposition pending before the Fiscal Court to apply a portion of the revenue for road purposes, which, if adopted, will insure good roads.

Lee county is situated in the Tenth Congressional, Seventh Appellate, Twenty-third Judicial, Twenty-ninth Senatorial and Ninety-second Legislative Districts.

LESLIE COUNTY.

(Revised 1907 by John Lewis.)

Leslie county was formed out of part of Clay, Perry and Harlan counties, in April 1878, the 117th in order of formation and was named in honor of Governor Preston H. Leslie, former Governor of Kentucky. The county is hilly. The soil on the river bottoms is rich and fertile. The Middle Fork of Kentucky river runs through the whole length of the county from north to south. Cutshin, Greary Fork and Beech Fork are its largest tributaries. All of them are navigable for rafts and flatboats for some fifteen miles each, and they afford ample water power facilities for propelling machinery. The whole county is well timbered, and a large per cent of the timber is suitable for lumber and other purposes. Like most of the mountain counties its greatest wealth lies in its timber lands and its minerals, which are coal and iron. The coal veins range from three to seven feet thick and the river hills have from three to five veins of coal in some of them and of fine quality. Cannel coal is found in many localities, veins ranging from two to three and one-half feet thick. The timber consists chiefly of yellow poplar, ash, sycamore, white oak, chestnut, chestnut oak, hickory, hemlock, or spruce pine, yellow pine, beech, maple and many other varieties. Timber is exported from the county in large quantities, it being floated down to market on the Kentucky river. At least ninety per cent. of the total area of the county is well timbered. Lands range now at present from \$6 to \$12 per acre, and some higher than that. This being a mineral and mountainous region, the agricul-

tural products of Leslie County are consumed within the county there being no surplus for export. The grasses best adapted to the soil are clover, timothy, red top and orchard grass. The farming lands are now being improved, as the farmers of the county are now taking much more interest in fertilizing and clearing up the land.

The population of the county is rapidly increasing.

There are eleven saw mills and grist mills in the county. These mills supply the local markets of the county with lumber, etc. Hyden the county seat, has eleven dry goods and grocery stores, two drug stores, a court house that cost \$13,000, and a stone jail that cost \$10,000. There are as yet no railroads in the county, the nearest shipping point being London, Ky., where they have to haul all of their goods a distance of fifty-five miles from Hyden. The county roads are in bad condition. There is not much interest in keeping them up.

Hyden, the county seat of Leslie county, is situated on the banks of the Middle Fork of Kentucky River, at the mouth of the Johnson's Rock House creek, a large tributary of the Middle Fork.

Leslie county is situated in the Eleventh Congressional, Twenty-seventh Judicial, Seventh Appellate, Thirty-third Senatorial and Ninety-third Legislative Districts.

The post-offices of Leslie county are: Asher, Chappel, Confluence, Cutshin, Dryhill, Hilton, Hoskinson, Hyden (c. h.), Inlay, Maddog, Napier, Obed, Sandy Fork, Shell, Shoal, Smilax, Sidna, Skidmore, Tracefork, Warbranch, Wooton and Gad.

LETCHER COUNTY.

Revised, 1907, by John A. Craft.

Letcher county is situated in the extreme southeastern part of the State. It was formed in 1812 out of territory taken from Perry and Harlan counties, and was named in honor of Gov. Robert P. Letcher. It is bounded on the north by Knott and Pike counties, on the east by the State of Virginia, on the south by Harlan and on the west by Perry county.

The surface of the county is mountainous, with narrow, fertile valleys between. Pine and Black mountains form part of the eastern

and southern boundary, and these ranges present some of the grandest scenery on earth.

The north fork of the Kentucky river finds its source in the northeast and traverses the county to the southwest, a distance of some thirty-five miles. Other important streams are Rock-house, twenty-six miles in length, and Live Oak, tributaries of the North Fork, and Poor Fork of Cumberland river. These streams, while not navigable for boats, furnish ample means for carrying away the millions of saw logs that this region holds for the markets, large numbers of which are now being moved away.

The soil of the narrow valleys, coves, and, in fact, most of the uplands, is very rich, producing good yields of corn, oats, etc. Tobacco, grown only in small quantities for home consumption, does well on most of the lands. Clover, timothy, red top and other grasses grow to perfection. The various vegetables suited to this climate are successfully cultivated, potatoes, turnips, cabbage, etc., being produced abundantly with little effort. This section is especially adapted to apple orchards. There are few places where the apple grows to such perfection in point of yield and flavor.

The forests of Letcher county seem almost inexhaustible in their supply of fine timber. Thousands of poplar trees are annually being converted into saw logs and drifted out of the streams to market. There is practically no limit to the oak and other timbers. The forests abound in oak, chestnut, ash, hickory, poplar, maple, etc. The best walnut has generally been taken away.

The higher hills of this county contain five distinct, workable veins of coal ranging in thickness from three to eight feet, including veins of the finest cannel and coking coals on earth, while under the lowest valleys are still other coal beds. Oil has not been prospected for, but indications point to its presence. Beds of iron lie within a stone's throw of these coal-beds. Fine building stone abounds. In some sections there are indications of lead and other minerals.

The natural curiosities, peculiar geological arrangement and formations in Pine mountain are most attractive. Some wonderful caves have been discovered, but not extensively explored. The water is pure freestone, with the exception of an occasional mineral spring, none of whose waters have been analyzed.

Farming, stock-raising and "logging" employ the people of the county. The logging industry is the most important source of money

at present, though a considerable number of cattle and some sheep go to market annually from the county. These are generally driven to the bluegrass counties. Land sells for \$2.50 to \$10 per acre. Perhaps no region offers greater inducement for the investment of capital than this section. The undeveloped wealth of the county is incomprehensible.

The county has no railroad connection with the outside world, the nearest point being Stonega, Va., twenty miles from the county seat. The nearest railroad point in Kentucky is Big Sandy, twenty miles from the county seat, the terminus of the Big Sandy & Ohio Railroad.

There are no turnpike or macadamized roads in the county. The common dirt roads are maintained under the general road laws of the State and are not in the best condition. The road system of the county as a whole has not improved, but has rather declined for a few years.

The character of labor in the county is exclusively native white, farm hands receiving fifty to seventy-five cents per day, \$10 to \$13 per month, and at timbering fifty cents to \$1 per day, including board.

Educational facilities are afforded principally by the public schools, which are well attended. Perhaps no better exemplification of the utility of our common school system can be found than in Letcher county. There is probably no county in the State where the general mass of children are as well up in the way of a common education. If a rival is to be found it must be in one of the neighboring mountain counties. Good school-houses are being built in the various districts not previously well provided, and good teachers are employed. There are sixty school districts in the county. Other good schools are usually maintained at Whitesburg and Rockhouse. There are some twenty churches in the county, including Methodist, Presbyterian, Baptist, Christian and one Mormon church.

Whitesburg, on the north fork of the Kentucky river, near the centre, is the county seat.

Letcher county is situated in the Eleventh Congressional, Seventh Appellate, Twenty-sixth Judicial, Thirty-third Senatorial and Ninety-seventh Legislative Districts.

LEWIS COUNTY.

(Revised 1907 by R. D. Wilson.)

Lewis county was organized April 27, 1807, being then a part of Mason county. The boundary line on the east leaves the Ohio river about four miles below Portsmouth, Ohio, in a curve southwest along the range of hills separating the waters of Kinniconnick creek (Lewis county) and Tygart creek in Greenup county, until in reach of the water sheds of Fox and Fleming creeks and the headwaters of "Kinney" and North Fork of Licking, where the line turns west and leaves the ridge and comes down to the North Fork, following that stream to the southwest corner of the county, thence a little east of north to the Ohio river and thence with said river forty miles to the beginning.

Lewis county lies in the form of a "watershed," about one-half lying toward the southwest and the other half toward the northeast, the "Poplar Flat" section being table land and is in a high state of cultivation, especially as to fruit, which grows in abundance and of the finest quality. The eastern portion is somewhat hilly and broken, but in the many small coves and on the hillsides grows millet, sugar cane and the finest of tobacco. Two millions of pounds of tobacco was grown in the county in 1906. Along the water courses and that portion lying on the Ohio river (forty miles front) is to be found the very choicest and best lands, producing from forty to eighty bushels of corn per acre and every other grain and vegetable in the same proportion. Melons and "truck" grow to perfection in all the river bottoms, the soil being as rich as cream and always ready for the plow. The same may truthfully be said of the Salt Lick, Quick's Run, Crooked and Cabin creek valleys, the latter two being strictly limestone and is included in the blue grass belt.

The water courses, as indicated, run north and east and to the northwest, Kinney being the largest stream, and is over one hundred miles in length. Petersville, a very lively and prosperous little village, is situated near or about its source, thence it flows in a northeastern direction and empties into the Ohio river, about two miles below the town of Quincy. It has been declared navigable. Its bottoms are quite fertile. Cabin creek is next largest in length and size and is in a very rich valley, broad bottoms with some of the best improved farms

in the State and a macadamized road running the entire length of the stream. Salt Lick is next and is a beautiful valley, equally well improved and a pike (free of toll and the first built in the county) running also the entire length, having its terminus at Vanceburg, the county seat. Quick's Run, next largest, and along its banks some of the very best farms and farmers Tobacco and corn grown in abundance and of the very best quality, and a pike, newly built and free to everybody, runs parallel with it and from its source to its mouth, a distance of twelve miles, and a constant stream and line of teams are to be seen every day bearing and hauling the timber (ties and lumber) and large crops to the railroad station and steamboat landings at its mouth and at Vanceburg also. Crooked creek and Sycamore are smaller streams, but there is to be found some good farming land, being limestone, and along the banks of each is to be found quarries and ledges of pure limestone rock and very fine for building purposes.

The soils consist of clay, sand and strong deposits of limestone. The limestone in the Cabin creek valley mentioned shows all the fossils usually found in the upper silurian stratum, and the soil lying above (the limestone deposit) is rich enough and strong enough to produce anything that grows. The principal crops are corn, tobacco, wheat and Chinese sugar cane and millet (especially in the "Kinney" valley and coves), and oats do well. Clover and timothy meadows grow to perfection as well as all classes of vegetables that grow in a like climate.

Timber is not so plentiful as it once was, but remains in sufficient quantities to meet all home demands so far as building and for fence post is concerned, while we ship out and send away railroad ties, lumber and posts in large quantities. The principal varieties are oak and chestnut in the eastern half or the "Kinney" section.

That there are valuable mineral deposits and fine stone quarries and workable clays remains without a doubt, as already there are a number of excellent quarries opened and are yielding the finest and very best of flagging stones and for fronts and foundations and seem to be lying in unlimited quantities.

Natural curiosities and some strange formations are to be found and seen on our hill tops and a few caves along our hill sides and some very prominent cliffs and large rock ledges, notably the "alum rock," at Vanceburg. For mineral springs, both as beautiful health resorts and for the very best of medicinal qualities, Lewis county is probably unequaled in the State, and one visit by the tourist or stranger to either Esculapia or Glen Springs will fully justify all that has been said of

these two famous health resorts. Hundreds of guests flock to both of the springs—about fourteen miles south of Vanceburg and a macadamized road all the way—and always return happy, well pleased and in better health. One visit to either Esculapia or Glen Springs is sure to impress the visitor as to insure his or her return.

The industrial development of Lewis county is in rapid progress, as is evidenced by the number of portable saw and grist mills that have come in, as well as other steam machinery. This county most certainly affords the very best place and opportunity for the employment of capital and promising the very best of returns.

The railroad and transportation facilities are of the very best. The great Chesapeake & Ohio railroad passes along the northern border of the entire river front of the Ohio, a distance of forty miles, besides a branch road from Garrison to Carter City (in Carter county), of fifteen more miles, and then the beautiful Ohio for the same distance, navigable for ten months in the year, with good macadamized roads leading in from the timbered and productive sections, it is readily seen that there is no lack of transportation facilities.

There are now over a hundred and five miles of macadamized roads, all free of toll, and are maintained about equally by taxation and compulsory labor, twenty-five cents on the one hundred dollars being now levied. The dirt roads are much improved, being ditched and drained under the recommendation of the court officials and adopted in 1895. There are about three hundred and sixty miles of road so maintained and some improvements suggested and carried out each year.

The character of labor employed is principally white and native to this county, and farm hands get from \$15 to \$18 per month, and board and lodging; and day laborers from \$1 to \$1.50 per day.

Lewis county has been keeping step with her wealthiest neighbors for a number of years. The school-houses of the county will compare favorably with those of any of our surrounding counties. We now have eighty-six white and three colored schools, in which we have at least six months' free schools each year. We have rebuilt about fifty-five school-houses in the past ten years and remodeled about fifteen more. We have also about fifty resident teachers, not enough to supply all our schools. We also have the Riverside Seminary, located in our town, which has an annual enrollment of from seventy-five to one hundred pupils, and have about five teachers employed. Vanceburg also has a splendid graded public school with about 200 pupils. We

also have a normal school during the spring and summer for about ten weeks, which has an attendance of about eighty to a hundred pupils. We have an enrollment of thirty-six male teachers and fifty-two female teachers.

Vanceburg is the county seat, and has in the last few years made remarkable progress not only in the increase in population, but in permanent and valuable improvements as well. The court house is a substantial brick, built at a cost of \$25,000. Vanceburg has grown from a small village and two stores to a thriving city of the fifth class, and has as fine hotels with all the modern improvements and accommodations as can be found on the Ohio river, and five church buildings, all large, roomy and beautiful edifices, that of the Christian church being the most modern and cost (nearly) \$10,000. Good graded schools. There are twenty stores of all kinds, a lodge each of the Masonic, Odd Fellows and Knights of Pythias, Order of Red Men, I. O. U. A. M., Modern Workmen of America and Daughters of Rebecca. Two large flouring and feed mills; two complete wagon and blacksmith shops that turn out one and two wagons, all "home made," each week and of the very best quality. It also has two tanneries, two wagon and buggy spoke factories, two locust pin and bracket factories, two saw and planing mills, and the town is lighted by electricity.

Quincy and Concord are thriving towns and besides these are the villages of Garrison, Petersville, Burtonville, Tollosboro, Poplar Flat, Cottageville, Trinity, Cove Dale, Valley, Martin and Firebrick, all having postoffices, stores, etc. Firebrick has a population of about five hundred souls, and one of the best plants in the State for making all kinds of brick.

The financial condition of Lewis county is of the very best, and the rate of taxation being but fifty cents for county purposes and in two years this indebtedness (incurred in the building of macadamized roads and iron bridges) will be wiped out and taxation greatly reduced.

Lewis county is situated in the Ninth Congressional, Sixth Appellate, Twentieth Judicial, Thirty-first Senatorial and Eighty-ninth Legislative Districts.

LINCOLN COUNTY.

Lincoln county is one of the three original counties of the State, was made a county by an act of the Legislature of Virginia, in the year 1780. It is located in Central Kentucky one hundred miles southeast of Louisville and about the same distance northwest of Cumberland Gap, lying at the foothills of the Cumberland mountains, bounded by Pulaski, Rockcastle, Garrard, Boyle and Casey counties, all of which were included in the original county. The lands are high rolling table lands, fertile and productive, and splendidly watered, Dick's river bounding and traversing the entire eastern portion, and the Hanging Fork of Dick's river the western portion. Buck creek and Green river both rise near the center of the county and flow, Buck creek south and Green river southwest. There are many smaller streams flowing from never-failing springs all through the county. About two-thirds or three-fourths of the land in the county is one of the best quality limestone land, bluegrass growing spontaneously. The principal crops are hemp, tobacco, corn, wheat, rye and oats, yielding on an average: Hemp, 1,200 pounds; tobacco, 1,600 pounds; wheat, 14 bushels; rye, 12 bushels; oats, 35 bushels; corn, 30 bushels and the cultivated grasses, clover, timothy, etc., from 1 to 2 tons of hay per acre.

Live stock of all kinds, horses, mules, cattle, sheep and hogs are raised extensively and fed for market, while the traffic in poultry and eggs has become very great, thousands of dollars being brought into the county by this industry alone annually.

The southern or mountainous portion of the county was originally covered with the finest timber of oaks, hickory, locust, walnut and poplar. When cleared up was only second rate land, but is well adapted to the growth of fruit, apples, peaches, pears, and, in fact, all varieties of fruit, both large and small. There is much of the timber of the county converted into spokes, staves, ties and building lumber.

There is found in the county building stone of the best quality. The gray limestone is the general formation which is easily burned into lime of the best quality and in many parts of the county is found sandstone mixed with iron of very superior quality. In the extreme southeastern portion of the county near the Rockcastle

line is found a very fine ledge, quite extensive, of marble or granite, which takes a polish almost equal to the Italian marble; it is mottled gray color and is fine for fireplaces, lasting in a fireplace for years.

There is every indication of oil in the county; in fact, wells have been sunk that give promise of an abundance. Near Stanford is found a fine workable clay, and years ago it was extensively used in making various kinds of pottery. There is no doubt that it could be profitably used and would prove a profitable investment for capital.

Gas is frequently found in almost all portions of the county, except in the cavernous sections, where we have several caves of considerable size. Mineral water of every kind is found generally near the foot of the knobs, but sulphur and chalybeate are found in various places in the county. Around Crab Orchard, the seat of the famous Crab Orchard Springs, is found almost all kinds of mineral water. Crab Orchard Springs is visited by seekers of health from all portions of the Union. Here is where the celebrated Crab Orchard salts are manufactured and shipped to all countries of Europe. In the same section is located Dripping Springs and Green Briar, each having a crowd of visitors during the spring season.

Some natural curiosities are found in the county, such as caverns and licks; the licks are frequented by live stock, and at an early date wild animals frequented them regularly. Indian mounds are quite numerous; some of them have been explored, and some very fine archaeological specimens found.

The educational advantages are good. The Stanford Female College at Stanford has an attendance of one hundred pupils and Christian College at Hustonville of nearly as many. There are in the county sixty-one school districts for whites and seventeen districts for colored children.

There are in the county 162 miles of macadam and gravel roads, maintained by direct tax of twenty-five cents on the one hundred dollars of the taxable property. There are 375 miles of county dirt roads maintained partly by taxation and partly under militia system. There are two railroads through the county, the Louisville & Nashville running east and west, a distance of twenty-three miles in the county, and the Cincinnati Southern running north and south a distance of twenty-two miles and the Kentucky Central from Stanford eastward, a distance of five miles.

The labor is plentiful, but not as reliable as it could be. Wages

516 *Seventeenth Biennial Report Bureau of Agriculture.*

for farm laborers, fifty to sixty cents and board, or seventy-five cents per day without board.

There are in the county over forty churches of the different denominations, with as many established Sunday schools; six fine flouring mills with a capacity of twenty-five to seventy-five barrels of flour per day, with railroad facilities for shipping; two canning factories, one at Kingsville with a capacity of ten thousand cans per day and the other at McKinney not quite so extensive.

Incorporated towns are Stanford, Rowland, Crab Orchard and Hustonville.

Stanford, the county seat, is situated on the Knoxville branch of the Louisville & Nashville railroad. In 1786, Benjamin Logan, for a considerable sum of money, deeded to the justices of the peace of Lincoln county a tract of twenty-six acres of land for a town site. In 1803, trustees of the town of Stanford, having been elected or appointed, had the tract laid off into thirty-eight town lots, the corporate limits having been extended from time to time, now being three-quarters of a mile square from the court house.

The town is watered by a good system of water works from the Old Fort Springs and other good springs, less than one-half mile from the town. It is also lighted by electricity, generated by the machinery of the water works and ice plant. Stanford contains five dry goods stores, ten hardware and grocery stores, three drug stores, two banks of a capital of one hundred thousand dollars each, two excellent flouring mills, and many other businesses. There are four white churches and three colored churches in the town.

Hustonville, a thriving town, situated in the western part of the county contains three churches, Christian College, seven stores and one bank with a capital of fifty thousand dollars.

Crab Orchard in the eastern part of the county, has seven stores, four churches and famous Crab Orchard Springs.

Lincoln county is situated in the Eight Congressional, Fifth Appellate, Thirteenth Judicial, Eighteenth Senatorial and Sixty-sixth Legislative Districts.

LIVINGSTON COUNTY.

Revised, 1907, by O. C. Lasher, Smithland.

Livingston county is situated in the western part of Kentucky, on the Ohio river, just north of the Purchase, and was organized in 1798, and named in honor of Robert R. Livingston, one of the committee which drafted the Declaration of Independence. It is bounded on the north and west by the Ohio river, on the east by Lyon and Crittenden counties, and on the south and west by the Tennessee river.

The county has an area of 325 square miles, and a population of about 12,000. It is safely Democratic and usually casts a total vote of 2,500. Beautiful hills and valleys, picturesque streams and wide river bottoms make up the principal surface features of the county. The Cumberland river flows across the county from east to west, emptying into the Ohio at Smithland, the county seat, giving the county about 120 miles of navigable river frontage—more than that of any other county in the United States. There are a large number of creeks in the county, which empty into the Ohio, Cumberland and Tennessee rivers, furnishing the most perfect water supply and drainage, so essential to the health of a country. The soil of the uplands is limestone and sandstone, the former being much more fertile than the latter, and very productive. The bottom lands of the numerous streams are very rich and productive, more particularly those which are subject to overflow. The second bottoms which are not subject to overflow are not so fertile, though they produce well and raise good crops of small grain, grasses and fruits, the latter being of a very fine grade.

The county is very rich in minerals, including iron ore, lead, fluor-spar, zinc and fire clay, and all of the above are being developed rapidly. Hundred of tons of fire clay are shipped out of the county each year and if railroad facilities were better there would be many times the amount taken out. The zinc and fluorspar mines near Salem, in the county, are said to be very rich, several of them having erected very expensive machinery. The same is true of those near Lola and Carrsville. The fire clay mines near Smithland have furnished the finest specimen of clay known in the world and the supply is unlimited, but the lack of railroad transportation has caused the mines to be abandoned for those near Salem, closer to the railroad.

There is also found in the county, baryta, native alum, kaolin, potter's clay, marl and clays known as ochre. There still exists quite a

518 *Seventeenth Biennial Report Bureau of Agriculture.*

number of well timbered tracts of land consisting of oak, hickory, poplar, elm, gum, ash, and some walnut. Agricultural lands are becoming very valuable, growing more so every year. The labor performed on the farms of the county is principally by resident white hands. Some colored labor, in some sections. Farm wages range from \$15 to \$20 per month, including board. The staple products of Livingston county farms are corn, wheat, oats, rye, tobacco, hay, sweet and Irish potatoes, sorghum, melons, turnips and fruits, corn, hay and wheat being the principal crops. Alfalfa is becoming quite popular with some farmers, and stock peas are raised extensively. Orchards along the Ohio river pay their owners handsome dividends, reaching the \$200 per acre mark, when well cared for. All the grasses grow well and pasture is generally plentiful. This is a fine county for raising fine stock, and there is a decided improvement in the grade of cattle and sheep raised within the last few years. Hogs are plentiful and are of the best breeds. There are no turnpikes in this county, but the roads are kept in reasonably good condition under the overseer system, supplemented by property and poll tax. The county is well supplied with excellent iron bridges, nearly all the wooden bridges have been replaced by the more permanent iron bridges.

There are fifty-two white common school districts, six colored school districts, and four of the white districts have established graded schools. All the school houses in the county are modern in type and well heated and lighted, and most districts are well supplied with apparatus for the use of the teacher. There are about forty churches in the county, including those of all denominations, the Methodist, perhaps, being in the majority. The county is out of debt and on the high road to prosperity, and withal a good county to live in. The tax rate for the current year, 1907, is 50 cents on the \$100.

A county farmers' club is kept up and the meetings are usually well attended.

Smithland is the county seat of Livingston county, and is situated in the southern part of the county at the mouth of Cumberland, on the Ohio. It is a town of about 1,000 inhabitants, enterprising and has good school house and churches, and a canning factory. The famous Echo Valley Springs are about one and one-half mile from town and are attended by many visitors every summer.

Livingston county is in the First Congressional, First Appellate, Fourth Judicial, Third Senatorial and Seventh Legislative Districts, all of which are Democratic.

LOGAN COUNTY.

Logan county was one of the first seven counties organized immediately after the admission of Kentucky into the Union as a State, being named in honor of Gen. Benjamin Logan, a Revolutionary officer and distinguished pioneer companion of Daniel Boone. It is bounded on the north by Butler and Muhlenberg counties, on the west by Todd county, on the south by Tennessee; and on the east by Simpson and Warren counties. Its principal streams are Clearfork, Mud river and Wolf Lick creek, whose waters find their way into Green river and Whippoorwill creek, Spring creek and Red river, which are tributaries of Cumberland river. The watershed of these streams is near the central part of the county. There is a diversity of soils in its confines; the southern portion known as the "barrens" having a red clay subsoil foundation with limestone rock underneath, which portion is well adapted to wheat and other cereals, and is particularly adapted to that type of tobacco known as the "Clarksville leaf"; the northern portion often designated as the "coonrange," does not present the same uniformity in its subsoils, its clays being varied with limestone underneath for the most part. Much of the land in this part is rather thin and broken, except the bottom lands of Mud river, and Wolf creek and their tributaries, which produce fine crops of corn, and also, where not too low, both wheat and oats.

The only minerals of the county are asphalt and coal. The asphalt beds lying between Russellville and Homer, north of the central portion of the county, are very rich and are being developed to some extent by the Standard Asphalt Company, composed chiefly of local capitalists, and by Theo. Becker, Esq., New York capitalist. The coal bed lies north and west of Lewisburg and appears to be a pocket having a thickness of about four feet. The coal is of a superior quality. The bed has not been developed to any great extent.

The northern portion of the county was at one time very heavily timbered, but most of the finest has been cut and floated down Wolf Lick and Mud river or shipped by rail. However, some nice logs are still being gotten out in that part, the timber business being

518 *Seventeenth Biennial Report Bureau of Agriculture.*

number of well timbered tracts of land consisting of oak, hickory, poplar, elm, gum, ash, and some walnut. Agricultural lands are becoming very valuable, growing more so every year. The labor performed on the farms of the county is principally by resident white hands. Some colored labor, in some sections. Farm wages range from \$15 to \$20 per month, including board. The staple products of Livingston county farms are corn, wheat, oats, rye, tobacco, hay, sweet and Irish potatoes, sorghum, melons, turnips and fruits, corn, hay and wheat being the principal crops. Alfalfa is becoming quite popular with some farmers, and stock peas are raised extensively. Orchards along the Ohio river pay their owners handsome dividends, reaching the \$200 per acre mark, when well cared for. All the grasses grow well and pasture is generally plentiful. This is a fine county for raising fine stock, and there is a decided improvement in the grade of cattle and sheep raised within the last few years. Hogs are plentiful and are of the best breeds. There are no turnpikes in this county, but the roads are kept in reasonably good condition under the overseer system, supplemented by property and poll tax. The county is well supplied with excellent iron bridges, nearly all the wooden bridges have been replaced by the more permanent iron bridges.

There are fifty-two white common school districts, six colored school districts, and four of the white districts have established graded schools. All the school houses in the county are modern in type and well heated and lighted, and most districts are well supplied with apparatus for the use of the teacher. There are about forty churches in the county, including those of all denominations, the Methodist, perhaps, being in the majority. The county is out of debt and on the high road to prosperity, and withal a good county to live in. The tax rate for the current year, 1907, is 50 cents on the \$100.

A county farmers' club is kept up and the meetings are usually well attended.

Smithland is the county seat of Livingston county, and is situated in the southern part of the county at the mouth of Cumberland, on the Ohio. It is a town of about 1,000 inhabitants, enterprising and has good school house and churches, and a canning factory. The famous Echo Valley Springs are about one and one-half mile from town and are attended by many visitors every summer.

Livingston county is in the First Congressional, First Appellate, Fourth Judicial, Third Senatorial and Seventh Legislative Districts, all of which are Democratic.

LOGAN COUNTY.

Logan county was one of the first seven counties organized immediately after the admission of Kentucky into the Union as a State, being named in honor of Gen. Benjamin Logan, a Revolutionary officer and distinguished pioneer companion of Daniel Boone. It is bounded on the north by Butler and Muhlenberg counties, on the west by Todd county, on the south by Tennessee; and on the east by Simpson and Warren counties. Its principal streams are Clearfork, Mud river and Wolf Lick creek, whose waters find their way into Green river and Whippoorwill creek, Spring creek and Red river, which are tributaries of Cumberland river. The watershed of these streams is near the central part of the county. There is a diversity of soils in its confines; the southern portion known as the "barrens" having a red clay subsoil foundation with limestone rock underneath, which portion is well adapted to wheat and other cereals, and is particularly adapted to that type of tobacco known as the "Clarksville leaf"; the northern portion often designated as the "coonrange," does not present the same uniformity in its subsoils, its clays being varied with limestone underneath for the most part. Much of the land in this part is rather thin and broken, except the bottom lands of Mud river, and Wolf creek and their tributaries and creeks, was formerly called the "barrens," and for this reason was avoided by the early settlers of Southern Kentucky. The soil produces fine crops of corn, and also, where not too low, both wheat and oats.

The only minerals of the county are asphalt and coal. The asphalt beds lying between Russellville and Homer, north of the central portion of the county, are very rich and are being developed to some extent by the Standard Asphalt Company, composed chiefly of local capitalists, and by Theo. Becker, Esq., New York capitalist. The coal bed lies north and west of Lewisburg and appears to be a pocket having a thickness of about four feet. The coal is of a superior quality. The bed has not been developed to any great extent.

The northern portion of the county was at one time very heavily timbered, but most of the finest has been cut and floated down Wolf Lick and Mud river or shipped by rail. However, some nice logs are still being gotten out in that part, the timber business being

518 *Seventeenth Biennial Report Bureau of Agriculture.*

number of well timbered tracts of land consisting of oak, hickory, poplar, elm, gum, ash, and some walnut. Agricultural lands are becoming very valuable, growing more so every year. The labor performed on the farms of the county is principally by resident white hands. Some colored labor, in some sections. Farm wages range from \$15 to \$20 per month, including board. The staple products of Livingston county farms are corn, wheat, oats, rye, tobacco, hay, sweet and Irish potatoes, sorghum, melons, turnips and fruits, corn, hay and wheat being the principal crops. Alfalfa is becoming quite popular with some farmers, and stock peas are raised extensively. Orchards along the Ohio river pay their owners handsome dividends, reaching the \$200 per acre mark, when well cared for. All the grasses grow well and pasture is generally plentiful. This is a fine county for raising fine stock, and there is a decided improvement in the grade of cattle and sheep raised within the last few years. Hogs are plentiful and are of the best breeds. There are no turnpikes in this county, but the roads are kept in reasonably good condition under the overseer system, supplemented by property and poll tax. The county is well supplied with excellent iron bridges, nearly all the wooden bridges have been replaced by the more permanent iron bridges.

There are fifty-two white common school districts, six colored school districts, and four of the white districts have established graded schools. All the school houses in the county are modern in type and well heated and lighted, and most districts are well supplied with apparatus for the use of the teacher. There are about forty churches in the county, including those of all denominations, the Methodist, perhaps, being in the majority. The county is out of debt and on the high road to prosperity, and withal a good county to live in. The tax rate for the current year, 1907, is 50 cents on the \$100.

A county farmers' club is kept up and the meetings are usually well attended.

Smithland is the county seat of Livingston county, and is situated in the southern part of the county at the mouth of Cumberland, on the Ohio. It is a town of about 1,000 inhabitants, enterprising and has good school house and churches, and a canning factory. The famous Echo Valley Springs are about one and one-half mile from town and are attended by many visitors every summer.

Livingston county is in the First Congressional, First Appellate, Fourth Judicial, Third Senatorial and Seventh Legislative Districts, all of which are Democratic.

LOGAN COUNTY.

Logan county was one of the first seven counties organized immediately after the admission of Kentucky into the Union as a State, being named in honor of Gen. Benjamin Logan, a Revolutionary officer and distinguished pioneer companion of Daniel Boone. It is bounded on the north by Butler and Muhlenberg counties, on the west by Todd county, on the south by Tennessee; and on the east by Simpson and Warren counties. Its principal streams are Clearfork, Mud river and Wolf Lick creek, whose waters find their way into Green river and Whippoorwill creek, Spring creek and Red river, which are tributaries of Cumberland river. The watershed of these streams is near the central part of the county. There is a diversity of soils in its confines; the southern portion known as the "barrens" having a red clay subsoil foundation with limestone rock underneath, which portion is well adapted to wheat and other cereals, and is particularly adapted to that type of tobacco known as the "Clarksville leaf"; the northern portion often designated as the "coonrange," does not present the same uniformity in its subsoils, its clays being varied with limestone underneath for the most part. Much of the land in this part is rather thin and broken, except the bottom lands of Mud river, and Wolf creek and their tributaries, which was formerly called the "barrens," and for this reason was avoided by the early settlers of Southern Kentucky, which produce fine crops of corn, and also, where not too low, both wheat and oats.

The only minerals of the county are asphalt and coal. The asphalt beds lying between Russellville and Homer, north of the central portion of the county, are very rich and are being developed to some extent by the Standard Asphalt Company, composed chiefly of local capitalists, and by Theo. Becker, Esq., New York capitalist. The coal bed lies north and west of Lewisburg and appears to be a pocket having a thickness of about four feet. The coal is of a superior quality. The bed has not been developed to any great extent.

The northern portion of the county was at one time very heavily timbered, but most of the finest has been cut and floated down Wolf Lick and Mud river or shipped by rail. However, some nice logs are still being gotten out in that part, the timber business being

number of well timbered tracts of land consisting of oak, hickory, poplar, elm, gum, ash, and some walnut. Agricultural lands are becoming very valuable, growing more so every year. The labor performed on the farms of the county is principally by resident white hands. Some colored labor, in some sections. Farm wages range from \$15 to \$20 per month, including board. The staple products of Livingston county farms are corn, wheat, oats, rye, tobacco, hay, sweet and Irish potatoes, sorghum, melons, turnips and fruits, corn, hay and wheat being the principal crops. Alfalfa is becoming quite popular with some farmers, and stock peas are raised extensively. Orchards along the Ohio river pay their owners handsome dividends, reaching the \$200 per acre mark, when well cared for. All the grasses grow well and pasture is generally plentiful. This is a fine county for raising fine stock, and there is a decided improvement in the grade of cattle and sheep raised within the last few years. Hogs are plentiful and are of the best breeds. There are no turnpikes in this county, but the roads are kept in reasonably good condition under the overseer system, supplemented by property and poll tax. The county is well supplied with excellent iron bridges, nearly all the wooden bridges have been replaced by the more permanent iron bridges.

There are fifty-two white common school districts, six colored school districts, and four of the white districts have established graded schools. All the school houses in the county are modern in type and well heated and lighted, and most districts are well supplied with apparatus for the use of the teacher. There are about forty churches in the county, including those of all denominations, the Methodist, perhaps, being in the majority. The county is out of debt and on the high road to prosperity, and withal a good county to live in. The tax rate for the current year, 1907, is 50 cents on the \$100.

A county farmers' club is kept up and the meetings are usually well attended.

Smithland is the county seat of Livingston county, and is situated in the southern part of the county at the mouth of Cumberland, on the Ohio. It is a town of about 1,000 inhabitants, enterprising and has good school house and churches, and a canning factory. The famous Echo Valley Springs are about one and one-half mile from town and are attended by many visitors every summer.

Livingston county is in the First Congressional, First Appellate, Fourth Judicial, Third Senatorial and Seventh Legislative Districts, all of which are Democratic.

LOGAN COUNTY.

Logan county was one of the first seven counties organized immediately after the admission of Kentucky into the Union as a State, being named in honor of Gen. Benjamin Logan, a Revolutionary officer and distinguished pioneer companion of Daniel Boone. It is bounded on the north by Butler and Muhlenberg counties, on the west by Todd county, on the south by Tennessee; and on the east by Simpson and Warren counties. Its principal streams are Clearfork, Mud river and Wolf Lick creek, whose waters find their way into Green river and Whippoorwill creek, Spring creek and Red river, which are tributaries of Cumberland river. The watershed of these streams is near the central part of the county. There is a diversity of soils in its confines; the southern portion known as the "barrens" having a red clay subsoil foundation with limestone rock underneath, which portion is well adapted to wheat and other cereals, and is particularly adapted to that type of tobacco known as the "Clarksville leaf"; the northern portion often designated as the "coonrange," does not present the same uniformity in its subsoils, its clays being varied with limestone underneath for the most part. Much of the land in this part is rather thin and broken, except the bottom lands of Mud river, and Wolf creek and their tributaries and creeks, was formerly called the "barrens," and for this reason was avoided by the early settlers of Southern Kentucky. The soil produces fine crops of corn, and also, where not too low, both wheat and oats.

The only minerals of the county are asphalt and coal. The asphalt beds lying between Russellville and Homer, north of the central portion of the county, are very rich and are being developed to some extent by the Standard Asphalt Company, composed chiefly of local capitalists, and by Theo. Becker, Esq., New York capitalist. The coal bed lies north and west of Lewisburg and appears to be a pocket having a thickness of about four feet. The coal is of a superior quality. The bed has not been developed to any great extent.

The northern portion of the county was at one time very heavily timbered, but most of the finest has been cut and floated down Wolf Lick and Mud river or shipped by rail. However, some nice logs are still being gotten out in that part, the timber business being

518 *Seventeenth Biennial Report Bureau of Agriculture.*

number of well timbered tracts of land consisting of oak, hickory, poplar, elm, gum, ash, and some walnut. Agricultural lands are becoming very valuable, growing more so every year. The labor performed on the farms of the county is principally by resident white hands. Some colored labor, in some sections. Farm wages range from \$15 to \$20 per month, including board. The staple products of Livingston county farms are corn, wheat, oats, rye, tobacco, hay, sweet and Irish potatoes, sorghum, melons, turnips and fruits, corn, hay and wheat being the principal crops. Alfalfa is becoming quite popular with some farmers, and stock peas are raised extensively. Orchards along the Ohio river pay their owners handsome dividends, reaching the \$200 per acre mark, when well cared for. All the grasses grow well and pasture is generally plentiful. This is a fine county for raising fine stock, and there is a decided improvement in the grade of cattle and sheep raised within the last few years. Hogs are plentiful and are of the best breeds. There are no turnpikes in this county, but the roads are kept in reasonably good condition under the overseer system, supplemented by property and poll tax. The county is well supplied with excellent iron bridges, nearly all the wooden bridges have been replaced by the more permanent iron bridges.

There are fifty-two white common school districts, six colored school districts, and four of the white districts have established graded schools. All the school houses in the county are modern in type and well heated and lighted, and most districts are well supplied with apparatus for the use of the teacher. There are about forty churches in the county, including those of all denominations, the Methodist, perhaps, being in the majority. The county is out of debt and on the high road to prosperity, and withal a good county to live in. The tax rate for the current year, 1907, is 50 cents on the \$100.

A county farmers' club is kept up and the meetings are usually well attended.

Smithland is the county seat of Livingston county, and is situated in the southern part of the county at the mouth of Cumberland, on the Ohio. It is a town of about 1,000 inhabitants, enterprising and has good school house and churches, and a canning factory. The famous Echo Valley Springs are about one and one-half mile from town and are attended by many visitors every summer.

Livingston county is in the First Congressional, First Appellate, Fourth Judicial, Third Senatorial and Seventh Legislative Districts, all of which are Democratic.

LOGAN COUNTY.

Logan county was one of the first seven counties organized immediately after the admission of Kentucky into the Union as a State, being named in honor of Gen. Benjamin Logan, a Revolutionary officer and distinguished pioneer companion of Daniel Boone. It is bounded on the north by Butler and Muhlenberg counties, on the west by Todd county, on the south by Tennessee; and on the east by Simpson and Warren counties. Its principal streams are Clearfork, Mud river and Wolf Lick creek, whose waters find their way into Green river and Whippoorwill creek, Spring creek and Red river, which are tributaries of Cumberland river. The watershed of these streams is near the central part of the county. There is a diversity of soils in its confines; the southern portion known as the "barrens" having a red clay subsoil foundation with limestone rock underneath, which portion is well adapted to wheat and other cereals, and is particularly adapted to that type of tobacco known as the "Clarksville leaf"; the northern portion often designated as the "coonrange," does not present the same uniformity in its subsoils, its clays being varied with limestone underneath for the most part. Much of the land in this part is rather thin and broken, except the bottom lands of Mud river, and Wolf creek and their tributaries and creeks, was formerly called the "barrens," and for this reason was avoided by the early settlers of Southern Kentucky. It produces fine crops of corn, and also, where not too low, both wheat and oats.

The only minerals of the county are asphalt and coal. The asphalt beds lying between Russellville and Homer, north of the central portion of the county, are very rich and are being developed to some extent by the Standard Asphalt Company, composed chiefly of local capitalists, and by Theo. Becker, Esq., New York capitalist. The coal bed lies north and west of Lewisburg and appears to be a pocket having a thickness of about four feet. The coal is of a superior quality. The bed has not been developed to any great extent.

The northern portion of the county was at one time very heavily timbered, but most of the finest has been cut and floated down Wolf Lick and Mud river or shipped by rail. However, some nice logs are still being gotten out in that part, the timber business being

confined mostly to cross ties and tan bark. The southern portion of the county contains but little timber, which is of comparatively recent growth, having grown up since the country was first settled. The district, being at an early date destitute of timber, except along its rivers and creeks, was formerly called the "barrens," and for this reason was avoided by the early settlers of Southern Kentucky. It embraces the best farming lands in the county.

There are thirty miles of turnpike in Logan county, all free of toll and well worked. The public roads are kept up by overseers appointed by the county court, to whom hands are allotted to keep them in repair, which is oftentimes sadly neglected. However, the roads of the county are comparatively good for about nine months in the year.

The county has eighty-five miles of railroad completed, and in operation within its borders, composed of sections of the Memphis branch of the Louisville & Nashville railroad and the Owensboro & Nashville, which crosses at Russellville, the county seat. Another line, the Cairo & Tennessee River railroad, is projected.

The mineral springs in the county used as health resorts are Buena Vista Springs about six miles west of Russellville, and Diamond Springs, in the northern portion of the county, near the Owensboro & Nashville railroad which is becoming quite a resort to health seekers of Southern Kentucky and Tennessee.

Nearly all the streams in the county can be, and are to some extent, utilized in operating machinery, such as for furnishing power for mills, etc.

Oak timber is yet abundant, with some poplar, beech and walnut. The principal agricultural products, of which there is a surplus produced for market, are wheat, tobacco, corn, oats, hogs, cattle, mules, horses sheep and vegetables of all kinds. The grasses best adapted to the diversified soil of this territory are clover timothy, red top, millet, bluegrass and orchard grass. Our farmers make use of the latest improved farming implements and machinery.

No effort has been made to check the wanton and unnecessary destruction of the forests; none to check or control the indiscriminate cutting of timber, and none to renew the forests where they have been entirely or partially destroyed.

The county is well equipped with flouring mills and has one planing mill.

There are within the county two colleges, both located at Russellville; one, Bethel College, is for boys and is under the control of the Baptist denomination; the other, Logan Female College, is

under the control of the Methodist, both of which have an excellent faculty. The public schools of the county are for the most part in good condition some of which are supplemented by district taxation in addition to the amounts received from the State.

Russellville, named in honor of Gen Wm. Russell, a Revolutionary officer, is the county seat, being situated near the centre of the county. Other towns and villages are Auburn, South Union, a Shaker community, Homer, Lewisburg, Edwards, Epley Station, Ferguson, Olmstead, Keysburg, Oakville, Adairville and Schochoh.

Logan county is situated in the Third Congressional, Second Appellate, Seventh Judicial, Ninth Senatorial and Twentieth Legislative Districts.

LYON COUNTY.

(Revised 1907 by N. W. Utley.)

Lyon county was formed in 1854 out of the southwestern half of Caldwell. Bounded on the north by Livingston and Crittenden, east by Caldwell, south by Trigg, west by Marshall.

In the river bottoms there is a large amount of level land of very fine soil, where it has not been run down by haphazard farming. Some of it has been in corn every year for a generation or two, the owners depending upon the silt to keep up the fertility. A very little tobacco or other products is planted on it, but it is capable of producing many other crops. Some move is now being made toward planting stock peas.

A large amount of the land is rolling in character, and while not producing as heavy crops as the river bottoms, yet under high cultivation, produces 50 or 60 bushels of corn, 800 to 1,200 pounds of tobacco, 15 to 30 bushels of wheat, and other crops in proportion. But these figures are considerably above the average of the average farmers' production. Other crops grown are oats, sorghum, millet, timothy, redtop, clover, peas, potatoes, all of which are grown only in limited quantities, tobacco and corn being the principal and almost only exports of farm products. Possibly half of the land between the rivers is hilly. Some of these hills, however, are made to produce fair crops of tobacco, corn and small grain. The whole county is well adapted to the growth of apples, peaches, pears,

plums, all kinds of small fruits of this latitude, including grapes, some very fine specimens of the latter being grown.

This county has long been noted for its fine timber, much of which is still on hand, notwithstanding the fact that many thousand logs have been rafted and hundreds of thousands of railroad ties sent out, and millions of feet sawed into lumber, used for building or shipped out. It consists of oak of all kinds, gum of two kinds, poplar, white and yellow elm, linn, black honey, locust black and white walnut, sycamore and several smaller kinds. Average price of timber lands is very low, probably not over \$8 or \$10 per acre.

Some of the finest iron ore known can be found in this county, including blue hematite. On the Illinois Central railroad is a cut of a thousand feet long and a hundred feet deep which was cut through a solid bed of it. There have been several blast furnaces, but the ore was mined by slaves principally, and they were not allowed to use powder, consequently much of it was not worked. Even since the war only surface veins were worked, and untold wealth of it lies deeper, as has been proven by prospectors. There was also a rolling mill, in which some of the finest finished iron ever known was made. No boiler was ever known to explode that was made of its product, when run by D. Hillman & Sons, the famous iron kings, who made charcoal iron almost exclusively. In so doing they denuded many thousand acres of land, which, however in twenty years grew up so it was "coaled" again, the second growth of timber sometimes growing to a diameter of fifteen and twenty inches in that length of time, when in favored situations. There are 40,000 acres of this land in this and Trigg counties, which can be bought for \$1.25 per acre, three-fourths of which would make good farms and orchards. It now forms fine grazing lands, and as it is not under fence, it is used by many stockmen for that purpose "free gratis." With proper effort vast wealth could be obtained from this and other iron lands in this county. Nothing is being done now in this direction. Very fine limestone, much of it suitable for building is found along the railroad and river. There is now a quarry running where the stone is wheelbarrowed directly into barges. Much of it is being made into lime, there being eight lime kilns five of them on the Tennessee and three on the Cumberland. Only three or four in operation, which, during the spring and fall, make and ship 200 to 300 barrels a week. Very good potter's clay is found in almost unlimited quantities, but nothing is now being done with it.

All of these are capable of immense development if the proper energy were used and capital could be obtained.

The Tennessee flows along our western border, and is navigable the year round. Even when other streams are ice bound its southern dip allows it to be warmed by the genial sun of Alabama, and boats can and do run all the time. Besides it so warms the atmosphere that strawberries will ripen earlier on its shores than further inland; and the early frosts of autumn are sometimes so warded off that we can save late crops, which a mile off are killed. I have received its benefit that way this week. The Cumberland flows through the county, and is navigable at all times except during long continued drouths, and during freezes. Livingston creek, along the northern boundary, is fifty miles long.

Eddy creek, a few miles above Eddyville has in time supported three flouring mills—none are now running. It affords a fine stream of water during the driest seasons, besides being fed by a fine spring at Princeton, and numerous other springs below it, one of which has volume and fall enough to run a small grist mill of itself. Power enough here going to waste to manufacture thousands of dollars' worth of woolen or cotton goods every year:

Eddyville has a fine spring flowing out of a cave which has been explored for a half mile. Kuttawa has a very fine mineral spring used as a health resort, but not extensively.

Industrial development has been on the decline, no doubt on account of the heavy railroad bond debt we have been burdened with for many years, which debt has hindered investments, especially in good roads, of which we stand sadly in need, but which are now perceptibly improving as a whole. Even between our two principal towns, which are within two miles of each other, the roads are a mere makeshift. We expect to start a new era of prosperity, as doubtless our idle iron mines quarries and clay pits will be investigated by capitalists, who will find them a good place to put money to reap large returns. Our unnumbered cubic yards of road building material, consisting of fine cement gravel and "natural ballast"—stone which appears to have been run through a crusher—all will afford a handsome return for capital invested. No doubt we will also have a good roads' movement pushed along for all it is worth, as our farmers are seeing the immense amount of taxes that are vanishing through the mud, and will soon be clamoring for State aid. Having two rivers and a railroad of fourteen or fifteen miles, we

need only good roads and plenty of capital to make our county one of the foremost in this end of the State.

In the last ten years we have paid off our railroad debt of \$300,000 built a commodious county clerk's office, with fireproof vault room sufficient to hold the records for one hundred years, erected fireproof jail large enough to accommodate all the criminals that we can be possibly afflicted with, put up eight steel bridges, expended large sums in opening and improving public roads.

A railroad is being surveyed through the county for the purpose of developing the iron and spar industry; in several places coal oil is found in small quantities on or near the surface of the ground. The Hillman Land and Mining Co., a St. Louis concern, has recently bought 25,000 acres of mineral timber and farming lands in Lyon, and expect to make iron at the Grand River furnaces, also to conduct a cattle ranch on their immense tract.

The Ewald Iron Co., of Louisville owns 6,000 acres of iron, timber and farming land in another body.

Good farm labor can be had for \$13 or \$14 per month and board—the more inferior and unreliable are less—the average being about \$11. Without board, the average is about \$16.

We have some of the best county schools, most of the buildings being of the most modern type, with seats, charts, blackboards, maps, etc., each occupied by live, well trained teachers all moving upward and onward. At many places where twenty years ago, a fourth rate or "licensed" teacher was thought to be good enough, we now have only the highest class obtainable. In many districts a "pay" school is conducted for three or five months after the public school is out, it holding six months. In each town is a high school ten months each year.

Eddyville, the county seat, was founded in 1799, on the north bank of the Cumberland river, forty-five miles from its mouth, one hundred and ninety miles from Louisville by the Illinois Central railroad, is a flourishing town, and seat of the branch penitentiary, with a large brick roller mill, a bank, newspaper, tobacco factory, two blacksmith shops, a full line of churches, ministers, lawyers physicians, stores and hotels.

During the year 1902, a splendid graded road, one and one-half miles in length, 40 feet wide, has been opened, connecting the town of Eddyville and Kuttawa, making them practically one town. At each end of this road there is a bridge; that at Eddyville is built of

wood 55 feet long, and spans Lick creek; the bridge at Kuttawa is 233 feet long, more than thirty feet above the bed of Hammon's creek, and is of steel. The eastern approach is more than 300 feet in length, 10 to 15 feet high and wide enough for two vehicles to pass at the same time. The road is made of earth, topped off with two feet of gravel. Many sites for residences and factories and a fine stone quarry are accessible by this road. Many other county roads have been worked by machinery and much improved.

Lamasco, ten miles southeast of Eddyville, founded in 1864, has two hundred inhabitants, two churches, Methodist E. South and Baptist, three physicians, two stores, two tobacco factories, two blacksmith shops, and a flourishing school.

Kuttawa, one and one-half mile below Eddyville, founded in 1880, or '81, by Chas. Anderson, ex-governor of Ohio, lies on the Illinois Central railroad and Cumberland river—a live wide-awake town of 1,000 inhabitants. Has three churches, three lawyers, three physicians, five dry goods stores, seven groceries, three general stores, two hardware stores, one tobacco factory, one large spoke factory, four blacksmith shops, one jeweler and watchmaker, one large roller flouring mill, two hotels, two saloons and one bank, and a fine high school.

A high grade of silver ore has been mined in the northwest corner of the county, at a spring known as Silver Spring. Not only was it stated that the ore was mined, but also smelted, and a fine article produced; but want of capital hindered further developments.

Lyon county is situated in the First Congressional, First Appellate, Third Judicial, Third Senatorial and Sixth Legislative Districts.

MADISON COUNTY.

(Revised, 1907, by M. F. Arbuckle.)

Madison county was organized in 1786, and taken wholly from Lincoln county, one of the three original counties, and only six years after the subdivision of Kentucky county into the three counties aforesaid. It lies on the south fork of the Kentucky river and is opposite Jessamine, Fayette and Clark. Estill, Jackson, Rockcastle and Garrard bound the other side, Drowning creek forming the line on the east

Seventeenth Biennial Report Bureau of Agriculture.

next to Estill and Paint Lick on the west next to Garrard. The other creeks of importance are Muddy, Otter, Bates and Silver, all named by Daniel and Squire Boone during their sojourn in the county in 1770.

Boonesborough, the headquarters of the Transylvania Colony Co., or Henderson Co., who bought all the lands embraced by the Kentucky, Ohio and Cumberland rivers from the Cherokee Indians in 1775, and built the first fort in the State, is in Madison county, and consequently, the permanent settlement of the county dates back a century and a quarter ago nearly. It has now an area of a little less than 400 square miles.

Its soil is a greater variety than any other county in the State. No finer bluegrass pastures can anywhere be found; native cane brakes; walnut, ash and maple trees. And there are the slashes with craw-fish and black-jack bushes; all intermediate grades of soil exist.

A great diversity of soil gives a wide range to prices of farm lands, the same varying from \$8 to \$80 per acre, fine bluegrass lands near Richmond having recently sold for \$75 to \$100 per acre. The labor employed is mostly native white and colored, at \$13 to \$18 a month and board, or \$18 to \$20, and the hands board themselves. Much improved farm machinery is now in use in this county.

Timber of good quality is scarce. Some walnut and poplar remain, and there is a limited quantity of oak in various sections of the county, but it is fast being cut into lumber by portable mills.

The Kentucky river touches the county on the eastern edge and takes a general semi-circular course around the north side to the western edge, and at any point is from ten to twelve miles from Richmond. It is navigable in winter for small steamers. Logs and coal are brought down the river from the mountains and supply the mills and trade along the river. Slack water from the lock and dam at High Bridge reaches the lower edge of the county.

While there are no present indications of finding any of the precious metals in the county, there is certainly an immense deposit of valuable products needing development. Elegant building stone in numerous places and in large quantities, near Clay's Ferry, on river and railroad; owing to the fine quality, it is locally termed Kentucky marble. On Browning creek, accessible by rail, there is a large deposit of fire-proof building stone that has been extensively used for years throughout the county, and it withstands the hottest fire without crumbling. Coal is found near Big Hill, and a railroad has been projected thither to ren-

der mining profitable. In the eastern portion of the county near Waco is an inexhaustible deposit of valuable clays, very rich in aluminum, and an immense deposit of white sand. The white clay, or kaolin, is but two or three feet under the surface, veins running from two to seven feet thick. It has been repeatedly tested by experts and manufacturers and received medals for excellency from the United States Government. If developed it will make queensware and works of art, while from the other valuable clays pottery and good brick and innumerable articles of profit can be made. There is a large demand from local builders for the sand which has the quality of being sharp and clear from dirt, will make good glass and could be used extensively in the cities by concrete manufacturers, lithographers, and in hundreds of other industries.

In and about Waco, which is a peculiarly favored section in these respects, salt was also manufactured at an early date. Every indication points to the presence of oil and gas in this section of the county. Oil oozes out of the ground in hundreds of places, the surface rock is full of black oil, having the appearance of asphalt rock. A local company struck black oil in sinking wells from 20 to 30 feet in a number of places. The black oil is a natural printer's ink of the best quality just as it comes from the ground. From a broken-down well considerable gas escapes for weeks until drowned out by water. Mineral springs are numerous in the county, while at the sulphur spring at Muddy creek are tons of sulphate iron, or fool's gold, embedded in the rocks on the surface. These vast deposits of undeveloped wealth only await the touch of enterprise and capital to draw thence untold wealth and to give employment to thousands.

Mallory and State Lick Springs are local resorts. Each is situated in the mountainous parts of the county, on the edge of the mountains. In the better portion of Madison county, where the bluegrass, hemp, etc., flourish, the natives are too busy looking after their products and herds of fine cattle to start manufactories, and in the eastern part of the county, where the lands are thin, and formerly unproductive, the people are not able to erect much needed plants to develop the hidden treasures without the aid of outside capital and energy. Less than a decade since, this soil was thought to be too poor to sprout blackeyed peas, but as if by magic this poor sandy clay soil has changed in a few years to a blooming fertile garden. The land when properly tilled and fertilized, is adapted to the growth of small fruits and vegetables, and

to-day there are not less than one hundred small farms profitably raising fruits and vegetables, where formerly ten farmers barely made a living. Hence, there is not as much interest taken in the industrial department as the possibilities demand, but all waiting for outside capital to reap the profits.

Richmond, the county seat, has two good modern flouring mills, two planing mills, ice factory, laundry, telephone, electricity, gas, water, but could make it profitable for dozens of manufactories and should have them.

Waco, Berea, Centerville and Kirksville are thriving smaller towns.

There is a large distillery at Silver Creek and five or six smaller ones in the county, and quite a number of good mills. For a century there have been three or four stoneware manufactories and two good flouring mills at Waco. The pottery clay there is the richest deposit in the world, and received the highest award at the Centennial Exposition in 1876. Recently there has been erected near Waco, on the Louisville & Atlantic railroad, a large drain tile and brick plant, and the demands for the products are excellent disposing of all they can make. There is room for more manufactories in the vast clay deposit, and a modern pottery would reap a rich harvest.

There are four national banks in Richmond, the county seat, with a half million capital and a million deposits. There is also a bank at Kirksville and one at Waco.

Mills and factories are needed to develop the varied resources of the county. A good class of emigrants would be cordially welcomed. Already several Englishmen have settled here and are conducting a thriving farming business and making excellent citizens.

There are about 200 miles of turnpike roads, and recently all have been made free. The county is well supplied with dirt roads, maintained by paying persons along the line of same for work thereon. This costs the county from \$6,000 to \$12,000 a year. We have five railroads in the county, all of them entering Richmond, one from Cincinnati, two from Louisville, one from Knoxville and one from Eastern Kentucky.

Hemp is a staple crop in this county. The first hemp break (to break from shock) ever tried in the State is now on the farm of M. F. Arbuckle, Silver Creek, where it was sent by the Chicago makers.

The State Normal School, recently established here, has an attendance of about 500 students.

The public schools in the county are in good condition and gradually improving. In many districts the public money is supplemented by subscriptions and local taxation. The Caldwell High School, which receives the public money of the Richmond district, is mainly supported by taxation.

Madison county is situated in the Eighth Congressional, Fifth Appellate, Twenty-fifth Judicial, Twenty-ninth Senatorial and Seventy-second Legislative Districts.

MAGOFFIN COUNTY.

(Revised, 1903, by L. F. Candill.)

The county of Magoffin is now about forty-four years old, having been formed in the winter of 1859-60, and was named in honor of Governor Magoffin. Situated in the southeastern part of Kentucky, and watered principally by the Licking river, and its tributaries.

The county is for the most part mountainous or hilly; but there are some broad valleys along the Licking river.

The soil is very fertile and much grain and grasses are produced by the farmers. Agriculture is the principal occupation of the people, and for the last few years have made a marked improvement in cultivating the soil and getting better kinds of cattle, hogs and sheep.

The timber of the county is of many varieties, such as poplar, oak, walnut, ash, locust, hickory, maple, pine, (both black and spruce pine), beech and lynn. Though much timber has been shipped down the Licking, there are vast forests of good timber yet standing on the mountain sides.

Minerals abound in this county in vast quantities. Coal is found in every section of the county, and in some sections a very fine quality of cannel coal is mined. Mineral springs are numerous, being found in all sections of the county. One, especially we would mention as being worthy of notice; is situated on Captain Jeff. Prather's bluegrass farm about one mile from Salyersville. The waters of this spring have been analyzed and have been found to contain medicinal properties equal to any in the State (at least so I am informed). We doubt not, that in the near future this spring will become a health resort of the diseased.

The public roads of the county are being improved some; but there are not such roads as there should be. The public mind should be awakened as to the building of good roads and the law should be enforced against the officials.

The schools of the county are gradually improving as to the efficiency of teachers and better school houses both as to the structure and equipment of the houses.

Salyersville is the county seat, and is situated on the Licking river. There are other small towns or villages in the county, i. e. Payton, Lakeville and Sublett; at the latter place there are now several oil tanks, owned and operated by the Cumberland Pipe Line Company. These tanks receive the oil from Somerset and Ragland oil fields and through the main pipe line is carried to the refinery in West Virginia. This county is spoken of by oil men as promising great amounts of oil in a few years. Hundreds of oil and gas leases and contracts for mineral land have been secured in this county.

MARION COUNTY.

(Revised, 1907, by John McChord.)

Marion county was formed in 1834 by cutting off territory for that purpose from the southern portion of Washington county by running a line due east and west making Springfield and Lebanon each equal distances from such line, which is about four and one-half miles.

Marion county has an area of about four hundred square miles. Its surface exhibits about all the variations to be found in the topography of any county in the State, level, undulating, with its hills, and knobs, almost rising into mountains, with their intervening valleys. It is splendidly drained by two systems of natural drainage. The northern portion drains into the Beech Fork of Salt river, while the southern system which is much the larger drains into the Rolling Fork of Salt river. The most important of the streams draining the northern portion are the Jordan, Hardin's creek, Cartwright's creek, Pleasant Run, and Little Beech; while Cabin Branch, Cloyd's creek, Arbucyle, Medlock, Mussens, Cherry Run, Clear creek, Pope's creek, Coney creek, Mattingly's Branch, Caney Run, Prather's creek, Sul-

phur Lick and Pottinger's creek, drain the southern portion, all ending in the Rolling Fork, though a number of them drain from the north to said stream and the others drain from the south to same.

The Rolling Fork is formed by the junction of the South and North Forks, at Bradfordsville, in the southeast part of the county, and from there runs in an almost direct western course the whole length of the county, leaving it at its extreme western border. Salt river is the outlet for all the waters of the county.

Marion county is in the center of the State, the exact geological center being within a short distance of Lebanon. It is bounded on the north by Washington county, the east by Boyle, the southeast by Casey, the south by Taylor, the west by Nelson and by Larue on the southwest, with a population of about 17,000.

The soil of the county is as varied as its geological formations. Its rocks belong to the three ages of the paleozoic era, covering the silurian, devonian and carboniferous, beginning with the oldest and ending with the more recent formations. The land, in the main, is good limestone land. The bottom land along the various streams is very strong and fertile and better land can not be found on the globe than is embraced in the Rolling Fork bottoms. The soils of the sub-carboniferous period are poor, and those resulting from the black slate, in which certain sections of the county abound, is a cold, wet, whitish soil, of but little value.

Good timber is very scarce; poplar is almost entirely gone, and oak and hickory are going fast. Walnut, which at one time abounded in great plenty is now almost wholly unknown to the logging men.

Corn, wheat, oats, hay and tobacco are the principal products of the farms. Corn, however, is the leading staple, as the rich bottom lands are too strong for wheat and the uplands do not produce enough per acre to justify a large acreage of it. Tobacco is extensively grown, and each year marks an increase in that industry in this county.

Labor on the farms is performed by the native white and colored hands and prices range from \$12.00 to \$15.00 per month with board. Farm help, however, is fast becoming a very serious problem for the reason that colored hands have long been depended on to do that class of work, or the greater portion of it, and each year finds them more difficult to employ, more unreliable, if not to say, more worthless, if not entirely so. There is an inviting field in this county for good white men who are willing to work as hands on farms.

The live stock industry is a leading feature of all farming in this county. Mules, horses, hogs, sheep and cattle are raised and shipped in large quantities. The county is distinctively noted for its mules, and while it can not talk "horse" with some of the blue-grass counties it has sent forth horses that have challenged the admiration of the most prominent turfmen, and the breeding and training of pure bred, fast horses is an industry pursued in this county, and which has met, and is meeting, with much encouragement.

The principal manufacturing interests of the county, outside of Lebanon, are the numerous distilleries where the liquor which both cheers and inebriates is made and made in quantities far beyond the possibility of home consumption, making it a most extensive article of commerce, bringing in thousands of dollars to our county. Many of these distilleries are the best equipped in the country, and their brands are household words wherever good liquors are held in high esteem. There are also good flouring mills at points in the county, which do a good business and make high grades of flour, as good as can be bought anywhere.

The roads of the county are good, but the pikes are greatly inferior to what they were under the toll system, and but little better than many of the old time country dirt roads, in their present improved condition—for many of them under the old system of warning out hands have been graveled and made equal to the regular turnpikes—that is, as they exist to-day.

In the matter of railroads Marion county enjoys the best of facilities. The Knoxville branch of the L. & N. enters the county on its western border at Dant, and with only slight deflections, here and there runs directly east through the county, leaving it a little beyond Gravel Switch on its eastern border. The Cumberland & Ohio, an abortion, so far as its name implies, runs from Lebanon to Greensburg, in Green county, and is operated as part of the L. & N. system.

The county has no bonded debt, and would be free of debt of any character, but for the necessity, which seemed to be apparent, of purchasing the many turnpikes that traverse the county in all directions, and the endeavor to keep and maintain them in order, free to the traveling public. This effort has created some county debt and caused our taxes for county purposes to reach the extreme limit permitted by the Constitution.

The educational facilities of the county are first class. A high standard of efficiency is required and reached in the teachers of our

public schools. Lebanon and Bradfordsville, each, have good graded schools, and each school district has a good school building, well equipped, and supplied with a competent teacher. St. Mary's College, for young men, is a very old, noted and flourishing institution of learning, situated about five miles west of Lebanon, on the L. & N., while Loretto Academy, the mother house of the Loretine Sisters of the United States, situated about ten miles northwest of Lebanon, is an ancient seat of learning for girls and young ladies. The old buildings of this institution have been supplemented with new ones, modern in every respect, and are very extensive and commodious. These two colleges have long enjoyed a high reputation and have been, and are now, extensively patronized.

Lebanon is the county seat of Marion county, and has a population in round numbers of 4,000. It is sixty-seven miles south of Louisville on the Knoxville branch of the L. & N. railroad, with eight daily mail and express trains arriving and departing at and from the city. Its citizens are industrious, enterprising people, and the numerous handsome business establishments attest that they are up-to-date. Lebanon has the best system of water works, with a high natural pressure, that can be found anywhere. Its growth has been slow, but it is sure, and its progress never ceases. It enjoys a very large trade as it is the only city of any importance within a radius of fifty miles. Its manufacturing interests embrace two large flour mills, two planing mills and large lumber establishments the Royer Wheel Co.'s works and several cigar factories.

Bradfordsville is the next two of importance with a population of about four hundred. It has a bank on a good safe basis, water works and a telephone exchange, and has all the modern conveniences of a small city. It is surrounded by the best agricultural country one would care to see, and at home it enjoys the flattering appellation of "God's Country." It is connected with Lebanon by turnpike, from which it is ten miles to the southeast.

Raywick, in the southwestern part of the county, is the next village of importance. It also has a good bank, and enterprising and up-to-date merchants. Like Bradfordsville, it is situated on the Rolling Fork, and is connected with Lebanon by turnpike. It has a population of three hundred or more, and is one of the very oldest settlements in this section of the State, and appears as one of only three postoffices in the county, outside of Lebanon, in an old guide published in 1845.

St. Mary, Loretto and Chicago, in the western part of the county, are nice little villages and support several general stores each, as do Penick, Riley and Gravel Switch, in the eastern and Calvary and New Market in the central and southern portion.

Marion county is in the Fourth Congressional, Third Appellate, Eleventh Judicial, Fifteenth Senatorial, and Fortieth Legislative Districts.

MARSHALL COUNTY.

Revised 1907 by Judge H. B. Holland.

Marshall county, named in honor of Chief Justice John Marshall, of the United States Supreme Court, and situated in the northeastern portion of Jackson Purchase, is bounded on the North and East by the Tennessee river, which separates it from Livingston, Lyon and Trigg counties; on the South by Calloway county, and on the West by Graves and McCracken counties.

Prior to June, 1842, it constituted the Northern part of Calloway county, from which it was separated by an act of the General Assembly of Kentucky, approved February 12, 1842, and the present site of Benton was selected as the county seat of the new county of Marshall, and named Benton, in honor of Thomas Hart Benton, then a prominent member of the U. S. Senate from Missouri.

Marshall county has an area of 324.5 square miles. Its surface is undulating, but the greater portion of it is level. It is well supplied with beautiful streams of living water that enrich the soil and add to the happiness of man.

Clark's river with its three branches, East, West and Middle Forks, is the largest and principal stream that traverses the county. It and its forks traverse the county from South to North, the bottoms along which these streams run are generally very productive and well adapted to corn and grass, but some of these bottom lands yield very fine tobacco. The West Fork has the best quality of land. The Middle Fork is a small stream but has, along its banks some of the best farms in the county.

Jonathan's Creek is the next largest stream in the county, and runs across the Southeast corner of the county, is a very beautiful stream

and has much rich and valuable farm lands lying along its bottoms, a large portion of which is now in a high state of cultivation.

Bear Creek with its rich bottom lands, a great part of which is yet uncleared, lies in the Eastern part of the county and empties into Tennessee river a few miles above the I. C. R. R. Bridge.

Soldier Creek, in the West part of the county, empties into the West Fork of Clark's river. Its bottoms are dry and produce an excellent quality of corn, wheat, oats, and a fine quality of tobacco. Grasses and clover of all kinds grow fine in this bottom.

Cypress Creek, that runs into Tennessee river, in the North part of the county, has high banks in most places, and on each side, almost from its source to its mouth, are as rich farming lands as can be found anywhere in the country. This part of the county was shunned by settlers, until a few years ago: it is now being rapidly cleared up and put in cultivation; and now the finest farms and most fertile fields in the county are to be found along its banks. It produces abundantly corn, wheat, tobacco, clover and all the grasses.

The rich belt of valley land lying along the bank of the Tennessee river, from Aurora in the Southeast corner to Stiles in the Northwest corner of the county, is a gray sandy loam, and very fertile. This forms the great corn and hay belt of the county and is probably not excelled by any land in the State.

Between Tennessee river and Clark's river, from Olive to Sharpe, is a beautiful belt of level table land, ranging from two to five miles in width. There is also a beautiful belt of level table lands from Wadesboro to Symsonia, in Graves county. This belt of table lands is called the "Flatwoods." These table lands are the best adapted to tobacco and fruit growing of any lands in the county. Much of the hill lands were abandoned a few years ago, and consequently it was soon covered in persimmon bushes and sedge grass, but since the farmers have learned that such lands can be kept in a high state of cultivation by filling up the gulleys and planting them in peas, clover and other kindred grasses and by rotation of crops, they have been fenced in and reclaimed and are now reckoned among the best farming lands, on the uplands, in the county. The yield of such land has been increased many fold and the price of such land has doubled in the past few years.

We have clay subsoil to a depth from two to ten feet, which is underlaid with a strata of red gravel.

The Illinois Central Railroad runs through the Northern part of the county for a distance of about twelve miles, while the Nashville, Chattanooga & St. Louis Railway, runs through the central part of the county for a distance of about seventeen miles. The county is well supplied with telephones, and the interest is still growing.

The public roads are maintained by taxation, and we will build about fifteen miles of gravel road this year. All the main public roads should be graveled, but under the present rate of taxation we can barely raise money enough to keep them graded and bridged. We are neglecting some in order to gravel others. We have as fine gravel for road purpose as any county in the State, and it is found in abundance in every section of the county.

The timber business has been immense for the past fifteen years, and there is but little of the best quality left, and the prices are so high it will soon be gone.

Immigration to this county from Virginia and some of the Northern States and part of central Kentucky has been rather heavy for the last few years. The Northern settlers are not so well pleased as those coming from Virginia and central Kentucky.

The farmers of this county are in better condition and doing better business than ever before, farm hands are paid from 75 cts. to \$1.25 per day. The development along all lines for the past ten years has been phenomenal. The 'American Society of Equity and the Dark Tobacco Growers' Protective Association are strongly organized in the county. Farmers are using more machinery and giving more thought to their work, and are rapidly developing scientific farming. More attention is given to stock raising than ever before, and we have some of the best breeds that can be found. Hogs, sheep and cattle are shipped in large numbers, and this is a source of great income to the farmers. We are altogether an agricultural people, having no mining or manufacturing interest worthy of mentioning. The retail merchants in the towns and villages do a good business. Marshall county has a population of about 15,000, has sixty-six white public schools and two colored; about sixty churches representing the following denominations, Methodists, Baptists, Christian, Presbyterian and Primitive Baptist. The entire county is local option.

Seventeenth Biennial Report Bureau of Agriculture. 537

Marshall county is in the First Congressional, First Appellate, Second Judicial, Second Senatorial, and Sixth Legislative District and has a Democratic majority from 800 to 1,000.

Benton, the county seat, has a population of about 1,000, two banks, two rolling mills, two saw and planing mills, two tobacco warehouses, one large storage tobacco house, four churches and a graded school, and eight free rural delivery routes.

Hardin, in the South part of the county, has a population of 300, one bank, two churches, one rolling mill, a number of retail stores and two rural free delivery routes.

Birmingham, on the Tennessee river, one of the oldest towns in the county, has a population of about 350, one bank, one rolling mill, eight retail stores, one tobacco factory and stemmery, and four churches.

Gilbertsville, on the Tennessee river and I. C. R. R. is a thriving village, has one bank, two churches and a number of retail stores.

Calvert City, on the I. C. R. R. has one bank, two churches, two rural free delivery routes, five business houses, and is one of the best shipping points in the county.

Sharpe, on the Benton and Paducah pike is a thriving village and has one of the best mills in the county.

MARTIN COUNTY.

(Revised, 1907, by J. R. Fairchild, Inez.)

Martin county was created by an act of the General Assembly or Legislature of Kentucky, at its session of 1869-70, and was taken from the fractional parts of the counties of Lawrence, Pike, Floyd and Johnson.

Martin county fronts on the Tug Fork of Big Sandy river, the boundary between Kentucky and West Virginia for about forty miles, and is bounded on its back lines by Lawrence, Pike, Floyd and Johnson, and contains 235 square miles. Character of land is quite mountainous; in fact, too much so to be adapted to farming.

The main creeks running into Tug river are Rockcastle creek, Calf creek, Turkey creek, Big Elk and Little Elk creeks, Buck creek, Collin's creek, Wolfe creek, Long Branch and Big creek.

The timber resources of Martin county are valuable and consist of great varieties, such as yellow and white poplar, lynn or basswood, white oak, black oak, chestnut oak, black walnut, white walnut, ash, elm, sycamore and beech in abundance. The most accessible timber along the river and main creeks has been marketed for saw logs or saw timber, but back from these streams and from railroads the timber is yet abundant and only about 30 or 40 per cent. of it has been used or exhausted from the county. The average price of timber lands is three to five dollars per acre, according to locality.

The soil is sandy and adapted to the raising of Indian corn, sugar cane, melons and grasses suited to the sandy soil. The sugar cane grows especially fine here and the Big Sandy sorghum molasses always commands a premium in all markets of the United States. The red top is the indigenous grass of the county and when cut early is a most valuable hay; if let cure too ripe it becomes tough and wiry. Other grasses such as timothy, clover, etc., do well for a time, but are soon superseded by the red top.

The mineral deposits of the county are very valuable, and they can scarcely be exaggerated. The coal encircles the mountains like the hoops on a barrel; at Warfield five workable veins can be seen above water level varying in thickness from three to six feet, including a five and a half foot vein of a good bituminous coal, identical with the Old Peach Orchard or Prestonsburg coal and marked by Professor Shaler as the A No. 1 vein of the State, and very uniform, its variation being less than six inches in thickness in passing through a mountain near a thousand feet. A good coking coal and twenty inches of best cannel coal are found up near the top of the hills in the same veins around Warfield.

Iron ore seems to be in abundance, but has not been developed, but nearly all the springs show chalybeate or iron to such an extent as to nearly ruin the water, which is not good as most mountain countries. The purest water we get is from our sandy bedded streams, which is good except in extreme low water. We have some fine coal showings all through this county on the line from Warfield to Prestonsburg in Floyd county. We have a fine building sandstone, easily quarried and that becomes quite hard and durable after exposure.

This is the center of a gas belt that is well known to all intelligent readers, and all the cities along the Ohio from Huntington to Cincinnati will soon be boomed from our product in this line. Natural gas in

abundance has been known here since the days of Washington, who speaks of the burning spring on the Tug Fork or Sandy, just opposite to Warfield on the West Virginia side, and on a line with this burning spring and the famous Mannington gas fields in West Virginia, called the "forty-five line," is found gas in great quantities. In drilling for oil the big Warfield gas well was struck in December, 1883. The Triple State Natural Gas & Oil Company, a company composed of Pennsylvania capitalists, is operating in this section. The company owns nearly all the gas territory in the county and pays a rental per acre on the same. They own 23 wells in Martin county and one or two in West Virginia. They find gas and sometimes small quantities of oil in the lime, at from 1,300 to 1,500 feet, depending upon the location. Their object is to pipe this gas to the nearest Ohio river towns, where they have a pipe line already laid, and Ironton, Ohio, Ashland, Catlettsburg and Louisa, Ky., and Huntington, W. Va., are now supplied from this field with all the gas they want.

They have in Martin county alone fourteen or fifteen miles of ten-inch line, five miles of eight-inch line, three miles of six-inch line pipe. The only "dry hole," or well that has not proven a good "gasser" was one drilled on Collin's branch, a tributary of Rockcastle creek. From what I personally know of these wells will state that this company has from 150,000,000 to 200,000,000 cubic feet of gas per twenty-four hours for the supply of their customers and has three or four sets of drillers at work all the time. They have an office at Huntington, W. Va., connected by telephone with all wells here. They employ a deal of high-priced labor at all times, such as drillers, four to five dollars per day; tool dressers, two and a half to three dollars per day; pipe linemen, two dollars and a quarter per day; caulkers, two dollars to two dollars and a half per day, and ditchers, one dollar and a quarter per day without board.

Martin county is not blessed with railroad facilities, but is surrounded by them.

Small steamboats ply the Tug river from six to eight months in the year, and the Government has the locking and damming of the Big Sandy and its tributaries well in hand now.

Our roads are not good. We have no macadam, but have 125 miles dirt road, maintained by the people and the county, which we can say as a whole are improving.

Our educational facilities are improving under our common-school

system. The Presbyterians have an academy which is doing a great work.

Eden (Inez postoffice) is our county seat, since 1874, when it was removed from Warfield, by a close vote of the people. Eden is situated near the geographical center of the county at the forks of Rockcastle creek and is a thriving little city in the sixth class.

Warfield is the only village of mention in the county, formerly the county seat. It is situated on the Tug Fork of Big Sandy, thirty miles above Louisa and seven miles below the mouth of Pigeon creek, W. Va., on said river. The Norfolk & Western railroad runs along Tug river on West Virginia side the entire distance of the border of Martin.

Martin county is situated in the Tenth Congressional, Seventh Appellate, Twenty-fourth Judicial, Thirty-third Senatorial and Ninety-sixth Legislative Districts.

MASON COUNTY.

(Revised, 1907, by C. D. Newell.)

Mason county is situated in the northern part of the State on the Ohio river. It is one of the nine counties formed before the State was admitted into the Union, having been organized in 1788 by the Legislature of Virginia. It is bounded on the north by the Ohio river, having a river boundary for eighteen miles; on the east by the county of Lewis; on the south by the counties of Fleming and Robertson, and on the west by Robertson and Bracken. The county is well watered and drained by its numerous streams and tributaries, the principal streams being Cabin, Bull, Limestone, Lawrence, Kennedy's, Beasley and Lee's creeks, which all drain the county on the north into the Ohio river, and the North Fork of Licking and its tributaries, Mill, Pummel, Bracken, Wells and Lee's creeks drain the central, western and southern portions of the county. This county has an area of about 220 square miles. The surface of the county along its water courses is hilly and as you approach the Ohio river this feature of the topography of the county becomes very pronounced. Back from the streams, however, widen out wonderful tracts of level and very fertile lands. In the southern part of the county the most fertile land is found; none probably in the State better.

The geological formation of this county is of the lower silurian and of that character recognized as the blue limestone, which is also composed of marine fossils, showing later life than those of Central Kentucky.

Most of the original unexcelled supply of timber has been taken from the lands of Mason county. The easy means for transporting it to market, the demands for domestic use and the great value of our lands have all contributed to denude the county of its timber, which at one time covered it so entirely. Diversified farming is engaged in to a considerable extent, especially in that section of the county in ready reach of the city of Maysville, which affords a good market for such productions, and also the city of Cincinnati is in ready reach of much of the county for the marketing of the produce from the truck farm. The Ohio river bordering on this county for eighteen miles gives it good water transportation. The turnpikes in Mason county are unexcelled by those anywhere, and there are about 300 miles of free pikes in this county kept up and maintained by taxation and free turnpike law of the State. The county is also well traversed by railroads. The Chesapeake & Ohio railroad runs along the entire length of its northern boundary and the Kentucky Central, now owned and controlled by the Louisville & Nashville system, runs through the central portion of the county from south to north, giving the county the very best of facilities for transportation. Good farm land can be purchased at reasonable prices in Mason, depending upon the location more than on the quality of the soil, good farm lands ranging from twenty to one hundred dollars per acre. The labor on the farm is most performed by native white and colored laborers, and they can be had for ten to fifteen dollars per month and board. The staples on the farm here are corn, wheat, oats, hay and tobacco. The very finest white Burley tobacco is grown in this county, this, in fact, being the home of that most magnificent species of tobacco, and that staple is produced in very large quantities. All the products of the farm are largely raised, and Mason county has an abundant surplus for market.

The educational facilities of this county are not surpassed by those of any other county in the State. The common schools are very superior in this county and well supported, the regular schools fund provided by the State is supplemented by a like sum raised by local taxation, thereby giving the county in each school district from seven to ten months of free school each year. New and good school houses have

been provided in each school district within the past few years and all the modern appliances for teaching supplied. The county also abounds with churches, about all of the regular orthodox denominations being represented.

Maysville is the county seat of Mason county. It is situated on the Ohio river, sixty-four miles above Cincinnati, and sixty-seven miles northeast of Frankfort. It is also on the Chesapeake & Ohio and the Kentucky Central railroads. Its population now is estimated to be about 8,000. Maysville has all the conveniences of modern times and is a delightful little city to reside in. It has many miles of nice paved streets, and elegant sidewalks. Has a line of electric street railway, fine system of waterworks, gas and electric light plants, telephone exchange and also connected by long distance telephones with all parts of the country. Large manufacturing establishments of various kinds, fine hotels, elegant churches and magnificent schools.

Tax rate for State and county purposes is one dollar on the one hundred dollar's valuation for the year 1907.

Mason county has nine rural free delivery routes: Five start from Maysville, two from Mayslick, one from Dover and one from Springdale.

Mason county is situated in the Ninth Congressional, Sixth Appellate, Nineteenth Judicial, Thirty-first Senatorial and Eighty-seventh Legislative Districts.

McCRACKEN COUNTY.

(Revised, 1907, by W. F. Bradshaw.)

McCracken county is situated in the extreme western part of the State, only one county—Ballard—lying between it and the Mississippi river. It is bounded on the north by the Ohio river, on the east by the Ohio and Tennessee rivers, on the south by Marshall and Graves counties and on the west by Ballard county. It was organized in 1825 and named in honor of Capt. Virgil McCracken, who was killed at the battle of River Raisin in 1813. The first county site was Wilmington, but was changed from there to Paducah in the early 50's. The Legislature during the winter of 1841 and '42 created the county of Ballard, from portions of McCracken and Hickman counties, reducing the area of the former nearly or quite half.

The county is generally level or rolling, there being no hills of any magnitude, although in the southern central portion the surface is somewhat broken and not very fertile. The county is nearly equally divided between bottom and upland. The bottoms, especially the river bottoms, are very fertile, producing from 50 to 100 bushels of corn per acre, and from two to three tons of hay. The creek bottoms are well adapted to the growing of any of the crops that are raised in this section of the State, producing the finest quality of tobacco, that often yields from twelve to eighteen hundred pounds per acre. The soil in the bottoms is black, sandy loam, underlaid with a blue clay foundation, while the uplands consist of a dark porous surface with a reddish-yellow subsoil of clay. The staple crops are corn, wheat, tobacco, oats, clover, timothy and stock "peas." Large quantities of the last named are being grown, the vine and peas being mowed and cured for forage and the ground then fallowed and sown to wheat. By many farmers the stock pea is considered a much better plant for enriching the soil and for renovating worn out and run down lands than clover. Wheat almost invariably makes a good yield when sown after peas.

The real resources of the county have never been half way developed, the soil and climatic conditions are such that it is most admirably adapted to growing all the fruits and vegetables of the temperate zone, and is especially adapted to the raising of very superior qualities of strawberries and raspberries and vegetables of every variety not only for the home market but that of Northern and Eastern markets, as its seasons are at least a month earlier than Cincinnati or Chicago and even St. Louis. It produces a very superior quality of watermelons and cantaloupes, that have a reputation throughout the land for their delightful flavor. Alfalfa, when sown on the bottom lands here, has proven eminently successful, while experiments in this crop are of only recent date. One instance is notable, where one of our farmers in August, 1906, sowed ten acres, and during the season of 1907 harvested five crops, averaging about a ton per acre, or net yield in profit of about forty dollars per acre.

Such a thing as "intensive farming" as practiced in the old countries is almost unknown in this county, the seed are planted and cultivated in the old way, and a fertile soil and salubrious climate are left to do the rest. While of course our seasons are not as early as Mississippi, Georgia or Florida, still our lands ought to be converted into one vast garden to supply early fruits and vegetables for the cities of

Louisville, Cincinnati, St. Louis and Chicago, all of which cities are within less than twelve hours from Paducah.

One of our gardeners during the season of 1907 sold \$500 worth of cabbage from two acres of ground. All the standard fruits, such as apples, peaches, pears, plums, cherries and grapes, flourish and attain great perfection in this county, while but few of our farmers exercise the necessary degree of patience in caring for orchards and vineyards, those who have done so have been amply rewarded. One of our farmers, living six miles west of Paducah, has realized considerable profit from his pear orchard; he has about 500 trees that have been bearing for twelve or fifteen years. These pears have been shipped to many parts of the United States and Canada, some of them have weighed as much as three and three-quarters pounds apiece, and in some instances in filling a bushel measure it only required thirty-seven pears to fill the measure. Apples and peaches with the proper attention would attain the same perfection.

Appreciating that our resources are lying dormant our citizens have awakened to the fact that we need the infusion of new blood, that we need a more intensive cultivation of the soil, that we need the help of those who have had a harder struggle for a livelihood and have been less favored by climate and soil, to assist us in cultivating this soil and sharing the profits. With this end in view our Commercial Club, aided by our citizens, are endeavoring to encourage immigration. While this move is only of recent date, we are working to that end, and have succeeded in the last six months in locating three or four substantial German families directly from Austria, who have bought land about eight miles from Paducah, and are improving it and building handsome brick houses, that will be an ornament to that part of the county.

The county is well watered by the rivers that wash its shores, and the numerous creeks that flow through its borders, many of which are perennial, and some of which almost navigable, such as Mayfield creek and Clark's river. It also abounds with springs of flowing water throughout the year; in fact, water is easily obtained almost all over the county by digging from a depth of fifteen to sixty feet, and owing to the abundance of water and native grasses that flourish, as well as all the cultivated forage grasses, such as timothy, herd grasses, orchard grass, clover and sorghum, this county is well adapted to raising stock of all kinds and species. In addition to these there are several lakes in the river bottoms that furnish fine

stock water and abound in fish, among the varieties being found cat, buffalo, croppies, black bass, striped bass, etc. There are no navigable streams flowing through the county.

Probably one-fourth of the area of the county still remains uncleared, but within the last few years the bulk of the valuable timber for building and mechanical purposes has been cut and made into lumber and cross ties for railroads. There still remains an abundance for fuel and fencing purposes.

There are no mineral deposits in the county, except an inexhaustible supply of very superior cement gravel suitable for building fine roads and constructing concrete work, and a good quality of clay for fire brick and coarse pottery is found in several localities.

The county contains several mineral wells or springs of valuable medicinal properties, but no remarkable natural curiosities, no building stone, etc.

The county has five railroads, all terminating at Paducah, the Paducah & Louisville branch of the Illinois Central, the Paducah & Memphis branch of the same system, the Paducah & Cairo branch, the Paducah & North Alabama and the Paducah, St. Louis & Chicago. These with the Ohio and Tennessee rivers, with Cumberland river only twelve miles from the junction of the Ohio and Tennessee and the great Mississippi only fifty miles below Paducah, gives the county the very best of shipping facilities, and competition between river and rail at all times insures low rates of transportation, both for freight and passenger traffic. There is considerable talk at present over additional lines of railroad, both over the river and through the county. Their building is simply a matter of time and the general opinion of those best in a position to know is, that they will be built in the near future.

McCracken county has about 110 miles of good well built substantial gravel roads, and about 300 miles of graded dirt roads, traversing every part of the county. The road system is kept up by taxation and under the supervision and control of a commissioner, elected by the Fiscal Court of the county. All roads are free and owned by the county.

The hired labor of the county is principally native white and negro. The price ranges from \$13.00 to \$15.00 per month, with board, with \$5.00 per month added where hands board themselves. The labor system is not the best and might be greatly improved, both to the benefit of the farmer and laborer, if the farmers would organize.

The public schools of the county are in a flourishing condition and the average attendance of pupils is large. In nearly every school district a good modern school building has been erected, showing that people are awake to the importance of educating the rising generation. The teachers will compare favorably with the teachers of any section of the State, many of them holding diplomas from colleges and normal schools. The colored schools are also in a flourishing condition and through the efforts of competent white superintendents are being constantly improved. Churches are numerous and nearly all denominations common to a rural population are represented; the Methodist, Baptist, Catholic and Christian or Disciples predominating, in the order named. There is hardly a neighborhood in the county distant more than three miles from some house of worship.

Paducah, the seat of justice for the county, is situated on the left or west bank of the Ohio and Tennessee rivers, twelve miles below the mouth of the Cumberland river and fifty miles above the junction of the Ohio and the Mississippi. It has about 25,000 population. It is the fourth city in the State in population and the second in manufacturing and commercial enterprise. Its wholesale grocery trade is probably the largest of any city in the State and its lumber plants and wood-working establishments are, some of them, among the largest in the country. The railroads have large shops located here that employ hundreds of skilled and unskilled mechanics, and their monthly pay-rolls run tens of thousands of dollars. As an evidence of Paducah's business standing there has not been a single failure of any magnitude among its merchants or manufacturers for the last ten years. There is no finer location for the erection of manufactories of almost any kind in the whole State than Paducah, and its hospitable citizens extend a hearty welcome to all good people who wish to come and make a home among them. It is a good town, beautifully located with fine streets, elegant church buildings, a splendid public school system, and a warm-hearted, generous and sociable people. The Paducah University, which is completed, cost \$75,000, and is one of the handsomest and best equipped school buildings in the State.

McCracken county has a population of between 50,000 and 60,000. The assessed value of all property, exemptions not included, is about \$12,000,000. The rate of taxation for all purposes is \$1.25 on each \$100 worth of property.

Our people have many things to be thankful for and few of which to complain. Our citizens are moral and law-abiding. Crime is rare

outside of the city of Paducah. Our location is healthy, severe epidemics being almost unknown, and local option prevails throughout the county except in Paducah. We extend a hearty welcome to all good people who wish to locate among us; and those seeking new homes might go far and fare worse than to "pitch their tents" in old McCracken. Increase in manufacturing is steady.

Land ranges in value from \$10.00 to \$75.00 per acre, owing to improvements and location to market. Unimproved from \$8.00 to \$40.00 per acre.

Woodville is a flourishing village of about 150-inhabitants. Has four general stores, one roller flour mill, fifty barrel capacity, and blacksmithing and woodworking shops. Maxon Mills has three general stores, a large roller flour mill, one hundred and fifty barrel capacity, large tobacco barns and a large lumber mill. Melber has a good roller mill and several general stores and a saw mill.

McCracken county is situated in the First Congressional, First Appellate, Second Senatorial and Fourth Legislative Districts.

McLEAN COUNTY.

McLean county was organized in 1853-54, and named in honor of Alney McLean, circuit judge, who resided in the adjacent county of Muhlenberg. It was formed out of parts of Daviess, Ohio and Muhlenberg counties.

McLean is bounded on the north by Daviess, on the east by Ohio, on the south by Muhlenberg, and on the west by Hopkins, Webster and Henderson counties.

The soil is fine, deep, rich loam of grayish color, very fertile, which is well adapted to tobacco as well as to all the cereals, grasses and fruits.

The surface is undulating for the most part, the remainder level, with large and occasional overflowing bottoms along Green, Rough and Pond rivers, all of which are rich and very productive.

The geological formations of the county are somewhat varied; some sections have gravel beds, others sandstone, while some have a small amount of limestone; portions are based on the subcarboniferous, but perhaps the greater part of the county on the true coal measure.

Below the surface of McLean is in many places richly imbedded with superior veins of stone coal and fire clay. The former is taken out in large quantities, a part of the same is applied to home use, the remainder is shipped to other States and counties.

Some forty years since, a number of wells were bored near Calhoun, prospecting for oil, but little was found. However, there is one well open yet, from which a small amount of oil flows now.

There remains scattered over the county large bodies of choice timber; its general character is hard wood; much of the timber suitable for sawing into lumber has been cut. The white oak poplar and walnut are mostly cut, yet there remains an abundance of very fine timber. There are vast bodies of beech, hickory, sycamore, elm, maple and black oak along the numerous streams, all of the finest quality.

Saw mills are engaged in converting the timber into lumber for shipment or home use; also large rafts of saw logs are run and an immense number of railroad cross ties are being put on the banks of Green and Rough river for shipment. These shipments add materially to the circulating medium.

Now, as the timber is removed the lands are put in cultivation and the products prove to be more valuable than the timber. The timber lands range in value from \$10 to \$30 per acre, according to the desirability of land and quality of timber.

These lands are cultivated with the most improved implements, at the season of the year most advantageous to their crops and land, and many of them keep their accounts with the exactness of a merchant. The people of McLean are of that type of Kentuckians who have redeemed the name Kentucky famous throughout the civilized world. They are generous, broad-minded, thrifty, enterprising people. They have introduced the best garden and field seeds, best fertilizer and the result in the quality and quantity of the crops grown is plainly discernible. Perhaps all the grains, fruits and grasses, as well as the products of good truck patches grown in Kentucky, are grown here in abundance. The dark type of tobacco which is well known as the "Green river fillers and wrappers," that rank high in the markets of the world, are the classes commonly grown in large crops, and the farmers take great pride with it. McLean has made much improvement in all kinds of stock and fowls in the last two years, so now she is beginning to rank with the best counties in the State in her improved breeds

of all kinds. McLean is supplied with railway and well supplied with waterway transportation for reaching the best markets. It has railroad connection with the whole outside world by means of the Owensboro & Nashville railroad, while Green river with 268 miles, and Rough river with 30 miles of navigable water the whole year round. Green river runs through the greatest length of the county, while Rough river forms part of the eastern boundary; this affords an outlet for freight of various kinds, to all sections of the great valleys of the Ohio and Mississippi rivers and their numerous tributaries.

The condition of the county roads is reasonably good, considering the vast amount of heavy hauling done over them. They are kept up by the county appropriations and road hands; with every voting precinct in the county is furnished a road machine. The road beds are mostly well built of dirt or clay, and the remainder are on natural gravel beds. The large streams have ferries and the smaller are spanned with wooden or steel bridges, while the branches and smaller streams are supplied with wooden culverts covered with dirt or gravel. The people are fast inculcating the idea that, to induce trade and capital to come to the county, the best way is to keep the roads in as good condition for the traveling public as possible.

McLean is noted for its wells of pure drinking water. In the southern part of the county near the town of Sacramento there are two wells of chalybeate and one of sulphur of the purest qualities.

The dam across Green river at Calhoun affords unusual water power; there are two flouring mills and one saw mill driven by it; the rest runs to waste. Just below the dam are shoals and rapids; this is one of the finest fishing points in the State.

The improved lands of McLean are valued on the average at \$30 per acre and the unimproved at \$15. Good district and graded schools are being taught in the county. Nice, comfortable frame buildings with patent desks. The education of the masses is rapidly advancing. All religious denominations flourish in the county. The financial condition of McLean county is first-class. She has neat public buildings, all paid for and she is not in debt otherwise. A poll tax of \$1.50 and a property tax of forty cents on the \$100 was levied for county purposes.

There has been a steady immigration to the county from all quarters in the past two years. An industrious, hardy class are

pouring into the fertile bottoms and opening out large productive farms. The citizens are generous and kind; they welcome immigration and are anxious to have this portion of the State developed.

There are vast acres of unimproved lands in the county to which inspection is invited by those who are looking for homes.

Calhoun, the county seat, is located near the center of the county, on the northern bank of Green river, a healthful location and one of the largest shipping points on the river. The citizens are very anxious and willing to lend a helping hand to any good man or men who will start manufactories.

McLean county is situated in the Second Congressional, Second Appellate, Sixth Judicial, Eight Senatorial and Seventeenth Legislative Districts.

MEADE COUNTY.

(Revised, 1907, by Thomas H. Ditto.)

Meade county is located in the central part of the State. It was taken from Breckenridge and Hardin counties, and named after Captain Meade, of Revolutionary fame. The Ohio river gives it a coast line of about forty miles on the northeast and southwest. The interior is well watered with numerous creeks. The soil along the river and creeks is rich and productive as any in the State, the remainder is undulating only enough to drain it and thus making a large acreage of splendid farming land. The hilly portion is noted for its fine production of fruit of all kinds, especially apples, peaches and pears. Diversified farming is generally carried on in an up-to-date manner, making the tillers of the soil prosperous and independent. Red burley tobacco is being raised with much success on its red clay and limestone soil, and stock raising is attracting much attention. About one-fourth of the land still remains in timber, such as walnut, hickory, the various kinds, oak and beech. Two railroads run through the county, affording with the Ohio river a convenient and quick market to all shippers.

Petroleum, natural gas and salt water were discovered several years ago in the upper part of the county, but the latter two have only been used. The gas is being piped to Louisville for heating and manufactories.

There are several mineral springs on Doe Run creek, that are patronized as health resorts. Fine ledges of oolite, granite cement and lithograph stone are found and are easily quarried. Also some croppings of copper and lead have been found in the southern end of the county. Churches of all denominations abound; and good school houses are in easy reach of children. Telephone lines are now in operation all over the county, connecting the towns and communities into one large family.

Rural mail delivery routes cover nearly the entire county. The poultry business has become one of the leading factors in the general thrift of the wide-awake farmers.

Meade county is in the Thirtieth Legislative, Tenth Senatorial, Ninth Judicial, First Railroad Commission, Fourth Congressional and Second Appellate Districts.

MENIFEE COUNTY.

(Revised 1907 by W. D. Craig, County Judge.)

Menifee county was formed from the counties of Powell, Bath, Wolfe and Montgomery, in the year 1869 and is bounded on the south by Red River and Powell county, on the north by Bath and Rowan counties and partially by Licking river, on the west by Montgomery county, on the east by Morgan county, on the south by Wolfe county. We have several streams flowing through the county, the largest of which are Beaver, Slate, Glady, Indian, Blackwater, and Salt Lick creeks. We have fine water limestone springs and wells. We have mineral water in Frenchburg which have medical properties. We have all kinds of soils, rich good land, limestone beds, river and creek bottoms, and smooth uplands, all of which produce well any kind of a crop. We have plenty of minerals in this county, especially iron ore. Some little oil has been found here. We are now supplying Mt. Sterling, Winchester, and Lexington with gas to heat their houses, stores, and run machinery. The county is now putting up machinery to operate it which it is said will cost \$50,000.

We have a good deal of timber land yet ranging from \$10.00 to \$30.00 per acre. Land where the timber has been taken off ranges from \$2.00 to \$5.00 per acre.

Farming is carried on to a fair extent.

Beaver creek from Frenchburg to Licking river is a navigable stream a distance of about 18 miles. The valley of Red river on the south and Licking on the north is very productive as a good portion of the land overflows.

We have fair roads in this county, which are worked under the old system of calling out the hands.

The C. & O. railroad runs to Rothwell in Menifee county a distance through this county of six miles. The Red River Valley railroad (narrow gauge) has a line in this county of about 20 miles. the Scranton railroad also has a line of about 10 miles, also a narrow gauge and the Big Woods Lumber Co. owns a narrow gauge of about 25 miles in this county. All of these are large shippers.

The character of labor in this county is white and the prices paid are about \$29.00 per month on an average. Frenchburg, the county seat, is now building up and many improvements are being made.

Menifee has 37 school districts and the money drawn from the State amounts to about \$8,200.

Menifee county is the place for poor people who have but small means. They can buy land on time and make enough money to pay for it on the lands. What we lack is industrious people. Then we would have one of the best little counties in the State. We are out of debt and taxes are reasonable.

Menifee is in the Seventh Appellate, Tenth Congressional, Twenty-first Judicial, Thirty-fifth Senatorial and Ninetieth Legislative districts.

MERCER COUNTY

Mercer county was named in honor of Gen. Hugh Mercer, a Revolutionary officer who fell at the head of his brigade at the battle of Princeton, and is one of the nine counties created by an act of the Virginia Legislature before Kentucky became a State. It was carved out of Lincoln county in 1785, being the sixth county in order of creation. It has an area of 149,238 acres, with a population of 15,034. It is situated in the central part of the State, and forms a portion of the famous bluegrass region. The exact

geographical center of the State is within its borders, about six miles west of the county seat. Its eastern and northeastern boundary follows the center of Kentucky and Dix rivers, which wind their tortuous way through deep canons several hundred feet deep.

Mercer presents a very great variety in the character and productiveness of her soils, as well as in topography. Over the greater portion of the area between Salt river and the eastern boundary the rocks are those termed the "Bluegrass Beds," whose decomposition gives the soils of the bluegrass region. The soils of the western portion are of a warm, quick nature which produces well when seasonable, and much of the land is little inferior to that of the eastern portion.

The lands of this section are peculiarly adapted to the raising of fruits and vegetables. Much of it is in grass and is well suited for sheep raising, which is a very important industry of the country. The greater portion of the timber land of the county, comprising about fifteen per cent of its area is to be found in this section, and here are located several saw mills. The best farming lands of the county are equal in productiveness and adaptability to a variety of crops to those of any county of this or any other State. Often on the same farm can be seen the largest corn, the heaviest wheat and oats, the tallest hemp, the finest tobacco, the most luxuriant meadows of clover and timothy, the most splendid bluegrass pastures, with winding streams of crystal water, fed by never-failing springs. While wheat, oats, corn, hemp and tobacco, clover and timothy hay are the great staple products of the county, rye, broom corn, buck wheat, potatoes, orchard grass, millet and Hungarian grass are also grown.

No county in the State is better watered. In addition to the streams mentioned, comprising about seventy-five miles in the county, it has numerous other streams, such as Thompson's creek, Big Indian, Brush, Glen's Lick, Deep creek, Shawnee Run, Cedar Run, Cheese Lick, Potomac, etc. It is also watered by innumerable springs. Nearly ever farm has one or more sources of never-failing water. A number of the strams of the county furnish excellent water power, and some are made available for flour mills and other industries. Being so well watered, the county is peculiarly fitted for stock raising. A number of our farmers are interested in raising short-horns. Some of its fine farms are devoted to raising thoroughbred or trotting and saddle horses, and are furnished with

commodious stables. A very prominent training stable is located at the county seat.

Mercer has a variety of timbers, oak, ash, hickory, walnut, sugar tree, cherry, beech, poplar, linn, pine, etc. It has many varieties of oak, which is most abundant. Walnut, ash, hickory and beech are common. The price of the land of Mercer varies from \$10 to \$8.5 per acre.

The manufacturing interest outside of Harrodsburg is represented by eight grist mills, two distilleries and several saw mills.

The county enjoys excellent transportation facilities for its agricultural and mechanical products. A complete net work of macadamized roads, comprising two hundred miles in all traverse every section. A dozen or more lead into Harrodsburg, the county seat. Every mile of turnpike is free and maintained by the county. The Cincinnati, New Orleans & Texas Pacific Railroad (Cincinnati Southern Railroad) runs through the eastern portion of the county for a distance of eight miles, and the Louisville Southern Railroad (now part of the Southern Railway,) entering it from the north, it follows the general course of Salt River to Harrodsburg, thence to Burgin, a distance of eighteen miles, and there connects with the Cincinnati Southern Railroad. The Southern Railway Company has recently determined to extend this line to Jellico, and have their corps of engineers at work surveying different routes, and it is expected that the work of construction will begin within a few months. Since the completion of the lock at High Bridge, large steamers now navigate the Kentucky river, affording cheap transportation.

A number of springs and wells of fine mineral waters of different kinds, such as sulphur and chalybeate, are distributed through the county. The Old Graham Springs at Harrodsburg are famous and are still a resort for the citizens of this place. Mercer has numerous quarries of the finest building stone, much of which is susceptible of a high polish.

By proper rotation of crops and the use of fertilizers by some, the productiveness of the soil is maintained. The best seeds are, as a rule, sown, and improved machinery is in general use. Most of the farmers are up-to-date.

Harrodsburg, the county seat, has the honor of being the oldest town in the State. Here "the first house" was built in 1774 by a company of thirty-one men under Capt. James Harrod, for whom it was named. However, its business houses and most of its dwell-

ings give no evidence of its age, being of modern construction and including many handsome buildings and beautiful homes. Fifty per cent of its dwellings, and all of its business houses are brick, metal roof buildings. It has a population of 4,000. It has six white and three colored churches and enjoys fine educational facilities. In addition to its white public schools with an enrollment of three hundred pupils and the colored public schools, it has Beaumont College (formerly Daughter's College) for young ladies, the Harrodsburg Academy for young men and young ladies, and Waman College, the latter being an institution of the colored Methodist church. It has two telephone systems, electric light plant and a fine system of waterworks. It has a large grain elevator, two planing mills, and ice manufactory, two large flour mills, a laundry, a carding factory, a large distillery, a turkey slaughter pen, two coal and lumber yards, a brick yard, one wholesale grocery store, two banks with a capital of \$100,000 each, four blacksmith shops and fifty business houses. It has two weekly newspapers, the Harrodsburg Democrat and the Harrodsburg Savings.

Burgin, four miles east of Harrodsburg, has a population of near 1,000, and has three substantial churches, a fine public school building, one bank, one newspaper, the Burgin Messenger, and a number of prosperous business houses.

Pleasant Hill or Union Village, is situated in the eastern part of the county, seven miles from Harrodsburg, and one and a half miles from "High Bridge," which spans the Kentucky river as a part of the Cincinnati Southern Railroad. This Shaker community is remarkable for its beauty and neatness and contains about four hundred members of that orderly religious society. It was founded near the beginning of the century, and some of the large stone buildings constructed of birdseye, limestone have stood for nearly a hundred years. A portion of the lands of the society including one of the buildings was recently sold to Gen. Jno. B. Castleman, of Louisville. The unique neatness of the place, the beauty of the surrounding country, and especially of the Kentucky river at High Bridge, charm the visitor, and of recent years it has become a summer resort for a number of Louisville people.

Salvisa and McAfee are flourishing villages amidst a fine agricultural country.

There are thirty-five churches in the county. Thirty-three Sunday schools have an enrollment of 2,000 pupils. The county has a good common school system.

Mercer county is situated in the Eighth Congressional, Fifth Appellate, Thirtieth Judicial, Twentieth Senatorial and Sixtieth Legislative Districts.

METCALFE COUNTY.

(Revised, 1907, by Judge J. W. Kinnaird.)

Metcalf county was formed in 1860, the greater part of it being cut from the eastern portion of Barren county, the counties of Monroe, Cumberland, Hart and Green furnishing small additions to same. It is bounded on the north by Green county, on the east by Adair, on the south by Monroe and Cumberland, and on the west by Barren, and is situated near the center of the southern border of the State. It was, when organized, the one hundred and sixth county of the State, and named in honor of Thomas Metcalfe, the tenth governor of the State.

It is drained by the Little Barren river. The best soil in the county is our limestone lands; have also red clay and slate rock soils. In fertility, the soils of the county may be classed in a general way as on an average with the best in this section of the State.

The county is well timbered, oak and beech preponderating; there are ash, hickory and other hard woods, and also some poplar. Large tracts of oak and beech timber abound in the county, trees growing to a very large size. The average price of good timbered land is \$10 to \$15 per acre.

The principal products of the Metcalfe county farm are corn, wheat, oats and tobacco, of which there is a surplus produced for market outside of the county. The public roads are the ordinary dirt roads under the supervision of surveyors, and are kept in repair, very bad repair, by "calling out" such persons as are liable to road duty to work on same under the laws of the State. There are no railroads in the county.

The water of the county is good, generally freestone in its character. There are several sulphur springs, or wells, the most noted of these is Sulphur Well, situated on Little Barren river, in the extreme northern part of the county, and is quite popular as a health resort. Sulphur Gum, near the center of the county, is also popular as such. There are no other mineral springs in the county of merit as such.

The average price of farm lands is \$12 per acre. The farms of the county are cultivated mostly by native white labor, some assistance being rendered by the colored laborers of the county, and the average price paid such laborers being \$8 per month with board. Our methods of farming are improving steadily, and the best and most improved field and garden seeds are used; our farmers are wide-awake and progressive.

The population of the county is about 10,000. The educational facilities of the county are such as are supplied by the common school system and the Edmonton Male and Female Academy. The public schools are well attended and conducted, and are in good condition. Taxation for county purposes is 40 cents on the \$100. Poll tax, \$1.50.

Edmonton, the county seat of Metcalfe county, is situated near the center of the county on the south fork of Little Barren river; it is a small town, has a nice public square and a good court house, a church, public school house, a private school house, several general stores, two drug stores and two splendid hotels. Also one first-class roller mill and two incorporated State banks, and an up-to-date newspaper plant.

The county raises nearly 1,500,000 pounds of tobacco and its cultivation is increasing in amount and quality.

Metcalfe county is situated in the Third Congressional, Third Appellate, Twenty-ninth Judicial, Nineteenth Senatorial and Thirty-fifth Legislative Districts.

MONROE COUNTY.

(Revised, 1907, by J. S. Miller, County Judge.)

Monroe is bounded its entire length on the south by Tennessee. The county was organized in 1820 from parts of Cumberland and Barren. The Cumberland runs through the eastern part of the county. Barren river and its tributaries drain more than three-fourths of the county, the entire northern, central and western part. Barren is formed by the junction of East Fork and Line creek, near Gamaliel, a thriving village, in the southern part of the county.

Creeks, brooks, rivulets and never-failing springs are numerous. No county in the State has a more equally distributed supply of water than this. The soil is generally of a limestone formation with red

clay bottom, especially the ridges and uplands, while the creek and river bottoms are rich alluvial. The soil, by reason of its clay bottom, is susceptible of the highest degree of improvement. Fields that have been barren and abandoned for many years have been recently refenced and are producing abundant crops by the judicious use of fertilizer. About forty per cent. of the acreage of the county is in its primeval state and covered with luxuriant forest trees—such as oak, poplar, hickory, chestnut, beech, ash, etc. Timber lands are usually cheap, from \$5 to \$10 per acre. Farming is mainly confined to the culture of cereals, but of recent years farmers are devoting some attention to fruit growing.

The climate is well suited to the growth and development of all staple fruits, viz., apples, pears, peaches, cherries, grapes and plums, while the forest usually abounds with wild fruits, such as pawpaws, black haw, persimmons, black walnuts, hazel nuts, hickory nuts, chestnuts, thorn apples and beechnuts, and all kinds of small fruits grow in abundance in the fields without cultivation, such as blackberries, raspberries, etc. The Cumberland is the only navigable stream in the county, and it is only in common years navigable from November till May; the Big Barren is not navigable, but serves a useful purpose to farmers; it affords them a means of shipping their timber to market in rafts during the season of high water. The Cumberland could be made navigable the entire year by locks and dams, which would be of inestimable value to this county. The public roads are far from being satisfactory; however, their condition has vastly improved in the past two years. They are maintained solely by the old-style of "warning in" the hands (all able-bodied male citizens between the ages of eighteen and fifty), to keep the roads in repair. The L. & N. and its terminal at Glasgow is our nearest railroad. Quite a number of saw and grist mills are run by water power; the creeks are generally short, not exceeding twenty miles in length, and often flow with great rapidity, thus affording ample water power for all kinds of machinery; many valuable mill sites near the county seat are now for sale.

Farm lands vary in price according to conditions from \$5 to \$15 per acre for uplands, while river bottom lands sell at \$25 to \$60. Wage earners and those who depend upon their daily labor for their support find employment upon the farms generally, while many get work at the saw mills and stave and axe handle mills. Farm laborers get from

\$12 to \$20 per month. A very large percentage of the citizens of this county own their own farms.

Tompkinsville, the county seat, was named for Vice-President Tompkins. It is located near the center of the county, on a beautiful plateau, between the Cumberland and Big Barren, exactly on the meridian of Louisville, and seven miles from the State line. It is practically a new town, as it was almost entirely destroyed by fire some ten years ago. It has three churches—M. E. South, Christian and Baptist. At least twenty handsome residences have been built in the last year.

The business houses are mostly of brick, and many fine and costly residences add to the beauty of this splendid inland town. The public buildings, court house and county jail are handsome structures, each being constructed on modern plans. The people are all native Kentuckians, or nearly so, not a man of foreign birth within the corporate limits.

The Tompkinsville Normal School, a chartered institution, is located here. Other colleges are located in the county, "The Didactic High School" at Gamaliel. The Monroe Normal School is located at Flippin. The Tompkinsville graded school is in fine shape and has an attendance of from 250 to 300 pupils for ten months in the year. The public schools are exceedingly prosperous, far above the average, and are in the hands of an able corps of teachers, many of whom hold State certificates, and quite a large percentage hold first-class county certificates. No supplementary aid is given by the county. The county is in a gilt-edged condition financially, no bonded indebtedness, no obligations other than current expenses. Tax rate for county purposes, \$1.50 per capita and forty cents ad valorem.

A fine steel bridge has just been built over East Fork creek, and this will give us a daily mail route regardless of high water.

Monroe county is in the Third Congressional, Second Appellate, Twenty-ninth Judicial, Nineteenth Senatorial and Thirty-fifth Legislative Districts.

MONTGOMERY COUNTY.

(Revised 1907 by A. A. Hazelrigg.)

Montgomery county was formed in the year 1796, out of Clark and was the twenty-second in the history of the State. It was named in honor of Gen. Richard Montgomery. At the date of its formation, it comprised a very large territory, but at various dates since then, portions of it have been repeatedly taken to form other counties, no less than eighteen counties having been either wholly or partly made from the original county. The county now is small in area, and lies east of the central portion of the State, and is bounded by Bourbon, Bath, Menifee, Powell and Clark.

The land for the greater part is gently rolling and well adapted for agricultural pursuits. In the southeast portion of the county, it is more broken and hilly.

While there are no large streams of water, there are many creeks and small streams, which furnish an abundant supply during the driest of seasons. The principal creeks are Slate, Hinkston, Spencer, Grassy Lick, Somerset, Lulbegrud, Brush, Sycamore and Aaron's Run. None of these are available for navigation, though several of them furnish power to grist mills.

The county is all bluegrass, except the extreme southern and southeastern parts, and it may be said of its bluegrass soil, there is none better in this or any other State. Being naturally rich, and having a clay backing of six to ten feet before striking rock, the soil is peculiarly adapted to raising good crops, even during an extended drouth. This backing of clay retains the moisture and enables the crops to stand a dry season much better than if the rocks were near the surface. As evidence of this fact, it may be cited that fine crops of corn and tobacco are raised in dry seasons, whilst in many other counties, where the rock is nearer the surface, crops are failures.

The principal crops are corn, tobacco, wheat, oats, rye and various grasses, such as timothy and clover. Quite an item of profit is now being made by our farmers in gathering bluegrass seed, their attention having been turned to it of recent years, and annually many thousand bushels are gathered.

Like most other bluegrass counties traversed by railroads, most of the timber has been cut down, though in the southern and south-eastern portions of the county there are still standing many fine bodies of timber. But within the past few years, the great demand for timber is causing these bodies to be rapidly depleted, and it will be only be a short time before it will all practically be gone. This timber is chiefly oak, ash, walnut, sugar maple, poplar and chestnut.

No mineral deposits have as yet been developed, though many years ago a fine quality of oil was struck some four or five miles east of Mt. Sterling, on Spencer creek. Several wells were bored, but the supply obtained being limited, the fields were abandoned. But Eastern parties have recently leased a large boundary with view of sinking more wells and thoroughly testing the territory.

There are practically no natural curiosities here, though there are still standing many mounds and ancient works, the handiwork of primitive inhabitants. There is only one mineral spring worthy of note, and that is situated at the village, or rather hamlet, of Aaron's Run, in the northern end of the county, about eight miles from Mt. Sterling. The spring gives forth an abundant supply of water strongly impregnated with sulphur. I am not able to say whether there has ever been made a chemical analysis of this water, but it is noted in the neighborhood for its medicinal properties. The reputation, though, is local.

The Chesapeake & Ohio railroad runs through the county and furnishes direct means of transportation to the sea coast. A branch of this road extends from Mt. Sterling, some eighteen miles to Rothwell, in Menifee county. When this road was first built, quite a great deal of coal and timber was brought to market over it, but all the available supply in that section has been exhausted, and if extended further so as to strike the great coal fields and forests of timber beyond Morgan county, it would be of untold advantage to this county.

While Montgomery is a very small county, it is well supplied with good free macadam turnpike and county roads. There are one hundred miles of turnpikes all free of toll, and about one hundred miles of good country roads. The pikes are maintained by taxation, and by careful attention the turnpike and county road system is being

greatly improved, there being no part of the county not within easy reach of either turnpike or road. This is of great value to the farmer, as it enables him to bring his crops to market easily.

In addition to the common school system, which is good, there is at Mt. Sterling a large public graded high school, which is maintained by local taxation, in addition to the State per capita.

There are also several private high schools and academies, all well patronized.

The labor employed on the farm is similar to that in other blue-grass counties, and prices received therefor run from \$15 to \$20 per month.

Mt. Sterling, the county seat, is a thriving, hustling, energetic city of 5,000 inhabitants, situated on the Chesapeake & Ohio railroad, and is thirty-three miles east of Lexington. It is known as the "Gate City," from the fact that it is the general distributing point for the mountain counties beyond. It is quite a business point, having four large wholesale groceries, two roller flour mills, a grass seed cleaning plant, a woolen factory, ice and electric plants, water works, machine shops, four banks, many large and thriving retail stores, fine church buildings, macadam street and brick and stone sidewalks. A splendid system of waterworks has been put in, the water being brought from Slate creek. A magnificent new courthouse adorns the public square and just opposite is the handsome new city hall. Besides having a local telephone exchange, it is connected with the rest of the State by long distance telephone. Mt. Sterling is one of the best cattle markets in the State, it being no uncommon sight to see 10,000 cattle at the various stockyards on a county court day, in addition to horses, mules and other stock. This market is attended regularly by stock men of this and other States.

Montgomery county is in the Tenth Congressional, Seventh Appellate, Twenty-first Judicial, Twenty-eighth Senatorial and Ninetieth Legislative Districts.

MORGAN COUNTY.

(Revised, 1907, by Finley E. Fogg.)

Morgan county is in Middle Eastern Kentucky, and is bounded on the north by Rowan, Elliott and Lawrence; on the east by Johnson and Magoffin; on the south by Magoffin, Breathitt and Wolfe and on the west by Menifee. It was organized as a county in 1822 out of territory taken from Floyd and Bath counties.

The county is drained by the Licking river and its tributaries, which are very numerous. The Licking runs through the central portion of the county in a northwestern direction, while its numerous tributaries drain the county from each side of that river. It is abundantly watered while so naturally drained. The soil of Morgan county along the bottoms of the Licking and other streams is very strong and fertile, and abundant crops are raised. The hill lands are also very productive. This is, however, a distinctively mineral and timber county. The largest, possibly, deposits of cannel coal in the world are found in this county, certainly none larger in the State. Bituminous coal and iron are also found in inexhaustible quantities, as is also the finest building stone. The mineral interests of Morgan have not been fully developed, because of the want of proper facilities for transporting the products to market. The timber resources of this county are unexcelled, and notwithstanding the large number of logs which have been rafted out of the county on the Licking river, from its many tributaries, the supply of the finest timber is scarcely half gone, as fully fifty per cent of the virgin forests yet remain; all kinds of timber known to Eastern Kentucky being represented in our forests. Oak, hickory, ash, pine, beech, walnut and poplar are the leading species of trees. Large tracts of valuable timbered land can be purchased at very reasonable prices per acre.

Large tracts of coal lands are now getting into the market, and many of them are being sold at reasonable rates. Big companies are being formed for the purpose of exploiting and developing the coal fields, which are, as stated in the report, the best in the State.

Diversified farming is not engaged in in this county for the want of markets for the products of the same. This is, nevertheless, a very fine county for fruit, and with proper facilities for marketing same.

the fruit industry would be quite profitable in this county.

The Licking river is the only stream in the county navigable, and it is only navigable for small steamers. The tributaries are only navigable for rafts and logs. There are no turnpikes in Morgan county. The county or the public roads are the ordinary dirt roads common to the greater part of the State, and are kept in reasonably good repair, and will compare favorably with any road kept under the same system, that of warning out hands who are liable to do road duty under the general road laws of the State.

The O. & K. railroad comes into our county from the L. & E. R. R. near Jackson and runs to Cannel City, in this county, which is the terminus of said road.

A railroad has been constructed from Cannel City to Piedmont, a point on the head of White Oak creek, in Morgan county, where large deposits of cannel coal are also being mined by the White Oak Cannel Coal Company. The cannel coal mines at Cannel City, Ky., owned and operated by the Kentucky Block Cannel Coal Company, are probably the largest cannel coal operators in the world, at any rate in the United States.

The Licking Valley railroad, which branches off from the C. & O. at Salt Lick has reached the mouth of Blackwater in Morgan county, and will doubtless be extended on up through the county, pursuing the general course of the river.

During the past year (1907) the Morehead & North Fork railroad has been constructed from Morehead, Ky., to the mouth of Yocum creek, a tributary of the North Fork, and the construction is being pushed on up the North Fork into the heart of the coal and timber territory. Lands in this county have more than doubled in value within the past five years, even before the construction of this railroad, and farms situated in close proximity to it, as well as coal and timber lands, have multiplied in value.

The North & South railroad, which has been surveyed through this part of the State from the Ohio river through the Cumberland Mountains and on to the coast, will also traverse the eastern part of the county and open up additional resources of immense value.

The market for coal and timber lands during the past year has been exceedingly active, and investments of foreign capital in those products have been large.

Gas in paying quantities has been found and is being marketed from wells in the southwestern section of the county; a paying gas

well has been located on the Elk Fork northeast of West Liberty; and productive oil wells have been drilled at West Liberty and Caney, the latter being on the southern boundary and one mile from the Ohio & Kentucky railroad.

The principal public improvement in the county recently is the construction of a new and modern court house, built of concrete blocks. It will be ready for occupancy January 1.

The inhabitants of Morgan are steady, industrious, law-abiding, peaceful and hospitable. Intemperance and crime are almost wholly unknown to the county. There has not been a licensed saloon in the county for twenty years. There is a good church and school house in every school district in the county. Great attention is paid to our common schools, and they are in a flourishing condition. A great advance has been made in that direction in the past few years. Our districts are provided with good comfortable school houses and with the modern appliances for teaching.

A steady increase in population has been going on in the county for years past, though no noteworthy immigration to the county has been perceptible.

West Liberty is the county seat of Morgan county, and is situated near the center of the county on the Licking river. It is a nice quiet little village, with enterprising merchants, good church and school house, and population of nearly 500.

Morgan county is situated in the Tenth Congressional, Seventh Appellate, Thirty-second Judicial, Thirty-fourth Senatorial and Ninety-first Legislative Districts.

MUHLENBERG COUNTY.

Muhlenberg county is situated in Middle-Western Kentucky, and was formed out of parts of Logan and Christian in 1798. It is bounded on the north by McLean and Ohio, on the east by Ohio and Butler, on the south by Logan and Todd, and on the west by Christian and Hopkins counties. The county is well watered and drained. Green river flows between this county and the counties of McLean and Ohio on the north, forming the dividing line between this and these counties. Big Muddy is in the southeastern part of the county. Pond river flows between Muhlenberg and the counties of Christian and Hopkins, while the numerous tributaries

of these streams afford ample drainage and a fine supply of water. The surface of the county is rather rolling though much of it is broken, and even hilly; the character of the soil, speaking in a general way, is a sandy loam, and quite productive; especially in the northern portion of the county, good farming land. This county is, however, more noted for its great wealth of minerals. Coal and iron of the best quality abound in the county in the largest and richest veins and deposits, both of which have been largely developed.

The best and finest timber also abounds throughout this county. Oak, poplar, walnut, beech, ash, and pine are all plentiful, and notwithstanding the many saw mills running in the county, the supply of fine timber is sufficient to last yet many years and large tracts of same can be purchased at very reasonable figures. Diversified farming is not engaged in to much extent but the same could be profitably followed if markets were easier of access, for this is a splendid county in which to raise melons and vegetables, the soil seeming to be especilaly adapted to same, and fruits of all kinds known to our latitude do well.

Green river, on our eastern boundary, is navigable for steamers, and being controlled by the Federal government is free for navigation. Our other streams within the county and on its boundary are only navigable for flatboats and rafts. We have no turnpikes and our county roads are the common dirt roads of the country, and are kept in fair repair under the general road law of the State. a system which evey one knows who has had any experience in that direction, never did make a good road and never will, but we can say of the roads in Muhlenberg county, that they are not as bad as in some other counties worked under the same system, and that our roads, furthermore, are improving each year. There are about fifty-four miles of completed railroad in our county, which has been in operation for several years. They constitute two grand trunk lines and give us good connection for transportation. The Louisville & Nashville runs through the eastern part of the county from north to south, and the Illinois Central road runs near the central portion of the county from east to west, crossing the Louisville & Nashville at Central City.

Our great abundance of cheap timber invites furniture factories, wagon manufactories, and paining mllls. Woolen factories and iron foundries ought to do well here; transportation is cheap, fuel and water abundant and found on every side.

Good farm lands can be purchased anywhere from \$10 to \$50 per acre; the staples of the farm are corn, wheat, oats, hay and tobacco, tobacco being the principal product, though in good seasons a surplus of the others are raised, also for market. The labor on the farm is performed by native white and colored hands, their services being obtained from \$10 to \$15 and board.

The educational facilities of this county are good. The common schools of the county are all well attended, are under good management, supplied with competent teachers, and the districts have good comfortable school houses.

Greenville is the county seat of Muhlenberg county and is located near the center of the county, on the Illinois Central railroad; it is a flourishing town with enterprising merchants, good hotels and schools, with commodious church buildings and live congregations.

Muhlenberg county is in the Third Congressional, Second Appellate, Seventh Judicial, Seventh Senatorial and Eighteenth Legislative Districts.

NELSON COUNTY.

(Revised, 1907, by Wallace Brown.)

Col. Isaac Fox, with others, in the spring of 1775, were the first settlers of what is now Nelson county, and located their fort on Cox's creek, which was called "Cox's Station." A permanent settlement was made in 1778 by Capt. Samuel Pottinger, on Pottinger's creek, where a fort was built, and on Simpson's creek. Thomas Polk and his companions settled and built a fort also. The present site of Bardstown was settled in 1776 and named "Salem," and 1782 was surveyed and regularly laid off and name changed to Bairdstown in honor of David Baird. John Fitch, inventor of the steamboat, moved to Bardstown in 1778, died in 1798, and was buried in the "Town Grave Yard," where his grave remains unmarked, though the spot is identified by records in the county court clerk's office. In October, 1784, Patrick Henry, Governor of Virginia, approved the act to establish the county of Nelson, the fourth county of the territory, the boundary line beginning on Salt river at the mouth of Hammond's creek and running south to Green river, down Green river to the Ohio, up the Ohio to Salt river, and up Salt river to the beginning.

The following counties have been carved out of the original territory of Nelson: Daviess, Breckinridge, Meade, Hancock, Hardin,

Grayson, Ohio, Larue, Marion, Taylor, Washington, and parts of Hart, Green, Edmonson, Butler, McLean, Bullitt, Spencer, Adair and Casey.

The northeastern part of the county is rolling bluegrass land, very fertile and highly productive. The land in and around Bardstown is a plateau through which the water courses have cut deep valleys. The western and southern parts of the county are crossed by a range of knobs on each side of which flow the Beech and Rolling Forks bordered by broad alluvial bottoms. The knobs are all fine timber lands, much of which is virgin forest. There are 40,000 acres of woodland in the county. What are known as the timber tracts (the knob lands) are valued at \$2 to \$10 per acre. The Rolling Fork is the southern and southwestern boundary of the county, while the Beech Fork for a distance of fifteen miles is the eastern boundary, whence it turns, flows west through the central part of the county to join the Rolling Fork. Both streams are capable of being made navigable by a system of locks and dams, and are now spanned at Boston and Maud by magnificent bridges. The county has about 325 miles of turnpike roads. The county has a system of "public roads" and turnpikes, worked by hired labor paid for by a road tax. There are eleven banks in the county, all doing a thriving business, and has fine railroad facilities.

The "Washington Beals," White Sulphur Springs, usually called Miller Springs, are used as a health resort. These springs have been pronounced the equal of the celebrated White Sulphur of Virginia in medical virtues, and are capable of being made noted resorts. Hydraulic limestone in a bed twelve to eighteen inches thick comes in under the lowest bench of magnesian limestone in a hill southwest of Whitrow creek, and also on Buffalo creek. Iron ore rich enough for profitable smelting is found in the knobs between the Rolling and Beech Forks, the kidney ore from near Nelson Furnace showing 35.64 per cent. of iron.

Our lands so vary in quality that values vary in the same proportion, say from \$2 to \$100 per acre. Farm labor may be had from \$15 to \$20 per month, but it is unskilled and uncertain labor. Our county has no bonded indebtedness.

Nelson county is in the Fourth Congressional, Third Appellate, Tenth Judicial, Fourteenth Senatorial and Thirty-ninth Legislative Districts.

NICHOLAS COUNTY.

(Revised, 1907, by Green R. Keller.)

Nicholas county, lying along the border of the great bluegrass section contains many hundreds of acres that compare favorably with the best producing lands in the State.

No county in the State produces a finer quality of white burley tobacco, or yields more abundantly wheat, corn, hay and oats. Her cattle rank with the best, and the broken lands caused by the Licking river are proving to be among the most profitable for sheep raising. During the past year many hundreds of sheep have been brought into the county to graze upon the hillsides along the Licking.

The public roads which were made free several years ago, were permitted to "run down" some, but new road making machinery is being introduced and great improvement is being made.

The farmers are turning their attention to raising horses and mules, and many of the best buyers from the East find this a good place to supply their wants. Several hundred weanling mules are raised in the county every year, and this industry seems to be on the increase.

No county in the State has made greater improvements in its school houses during the past decade than has Nicholas. Then, too, our farmers have made great improvements in their farm houses and stock barns. Very few shabby farm houses are to be seen in the county.

Last year Nicholas county raised over three and a half million pounds of white Burley tobacco.

Carlisle, the county seat, is one of the most thriving county towns in the State.

Honest and industrious people will find a welcome to Nicholas county.

Nicholas county is in the Sixth Appellate, Ninth Congressional, Eighteenth Judicial, Thirtieth Senatorial and Eighty-sixth Legislative Districts of the State.

OHIO COUNTY.

(Revised, 1907, by Barnes & Anderson, Attorneys.)

Ohio county is one of the largest counties in the State in area and has recently become one of the richest counties of the Commonwealth. It is rich in coal and mineral and has an inexhaustible supply of coal. Green river bounds the county on the south for a distance of seventy-five miles, and the coal properties along this stream are now being developed, which adds thousands of dollars to the county every year. Rough river, a beautiful navigable stream traverses the county and drains a large and fertile region. Our timber supply, which once was the best in the State, is now about exhausted, although we have a great amount of merchantable timber yet in our forests. We have in the county about fifty-five miles of railroad, the Illinois Central railroad owning the entire system; the road passing through some of the very best coal territory in the county. The Madisonville, Hartford & Eastern Railroad Company is now constructing a line of railroad from Madisonville in Hopkins county to Mitchell Station in Ohio county, which road traverses the entire length of the county, and the same will be completed early next year, and when completed this county will be second to none within the confines of this State. Our soil is rich, our minerals are superior, our citizenship the very best, our educational facilities unexcelled by any county in the State.

There are numerous small streams and creeks within the county, the valleys of which are rich and productive, and the adjacent hills are rich in fertility for fruits, garden stuff, wheat and clover, and the farmers of the county are progressive, contented and a happy class of people; modern methods are used in cultivating their crops. Tobacco, wheat, oats, clover, red top, timothy and orchard grass grow in abundance. Horses, mules, hogs, sheep and cattle are raised in large numbers and of the most improved breeding.

The county has five miles of turnpike connecting Hartford, the county seat, with Beaver Dam on the Illinois Central Railroad, and the main streets of Hartford have been piked and lasting concrete pavements made. There are five splendid and costly iron bridges across Rough river in different parts of the county, and good and lasting iron structures have been built across the small streams of the county on the principal roads.

Coal exists in superior quality and unlimited quantity south of Hartford and along Green river from Cromwell to Livermore, and during the past year large and extensive improvements have been made in the coal industry of the county; new mines have been opened, during the past year large and extensive improvements have been made in the coal industry of the county; new territory purchased preparatory to new openings, and ere long this county will rank foremost of all the counties of the State in her coal industry. In addition to our coal industry, iron ore and lead are found in this county.

The county is well supplied with free schools, Hartford, Beaver Dam and Fordsville each having a graded school and all are in prosperous condition.

Hartford, the county seat, is the largest town in the county, is at the head of navigation on Rough river, and is surrounded by the richest farming lands in the State. It has a population of about 1,500, three banks, two flouring mills, three sawmills, electric light plant, ice factory, tobacco factory, brick plant, two large hotels, four churches and one of the finest school buildings in Western Kentucky; has two weekly newspapers, two telephone systems, and in all the business portion of the city good concrete pavements ten feet wide. Our merchants are progressive, our physicians are the best, our lawyers are the brightest, and our preachers are the most eloquent in the State.

The county has a population of about 38,000 and has about 6,700 voters. The county is situated in the Fourth Congressional, Second Appellate, Sixth Judicial, Seventh Senatorial and Twenty-sixth Legislative Districts. The tax rate for county purposes is fifty cents on each hundred dollars of taxable property.

Hartford, the metropolis of Ohio county, and the center of business of the county is one of the most beautiful towns of the State, its citizenship is the very best, its business interests can not be excelled, its shipping facilities are unequalled. We have three rural free delivery routes out of Hartford, with two more in prospect. Our county is now practically covered with rural free delivery. This is one of the best counties in the State for emigrants, and investments in our coal lands will reap the investor a rich harvest, and we will take pleasure in furnishing investors all information desired.

OLDHAM COUNTY.

(Revised 1907 by Chas. H. Morris.)

Oldham was created in the year 1723 from portions of Henry, Shelby and Jefferson counties, and was named after Col. Wm. Oldham, a gallant officer in the revolutionary war who came to Kentucky in 1779 from Beverly county, Virginia, and settled near the falls of the Ohio. Oldham county lies in the north middle part of the State, is bordered on the north by about twenty miles of the Ohio river, adjoins Trimble county on the north Shelby county on the south, Henry on the east and Jefferson on the west. The soil is fairly good and in some sections of the county, near Shelby and Jefferson counties, exceedingly rich; the whole county is well adapted to farming and stock raising. The northern part of the county is much broken, but the soil is of very good limestone quality and produces abundant grass for grazing purposes. Through the center of the county on each side of the Louisville & Nashville railroad the soil is rather thin, but well adapted to the raising of fruit, especially grapes, which mature rapidly and are of excellent flavor. The grape crop amounts annually, perhaps, to one million pounds and has been a very profitable crop. The land produces wheat, corn, tobacco, oats and various grasses in abundance, especially orchard grass, which is a valuable crop for both seed and grazing.

Oldham county has the distinction of producing more orchard grass seed than any other county in the United States. Stock raising is largely followed in this county and there are several herds of fine cattle in the county, as well as swine and flocks of sheep. The county is very healthy, being of a high altitude, well watered by springs and two large creeks, Floyd's Fork and Harrod's creek, which flow through the entire county from east to west.

The L., C. & L. branch of the L. & N. railroad traverses the county from west to east for twenty miles, and affords excellent accommodation for the traveling public, as one can go to the city of Louisville, one hour's ride, at almost any hour, during either day or night. It is the junction of the L. C. & L. and Short Line.

The Louisville and Eastern Railway operates an electric line between Louisville and La Grange, handsome, well equipped cars

running hourly between the above named points. They also carry light freight and express, and by this means there is competition both in the passenger and light freight traffic.

Lagrange, the county seat, a beautiful residence town, has a population of about 1,100, with streets well macadamized, shade trees in abundance; has two banks, seven churches, viz.: Presbyterian, Catholic, Christian, Methodist, and Baptist white, and Baptist and Methodist colored. Funk Seminary a school that affords an excellent opportunity for a good education, is located at Lagrange. The common school for the district is endowed and gives the patrons seven or eight months free school. A canning factory affords the farmers an additional paying crop in the way of tomatoes of which there are annually canned about one hundred thousand cans, affording employment to fifty hands for several months in the year. Recently a cigar and tobacco factory has been started, which bids fair to be a live industry.

Other towns in the county are Ballardsville, Floydensburg, Beard, Pewee Valley, Goshen, Brownsboro and Westport, on the Ohio river.

At Pewee Valley is located the Confederate Veteran's Home. One-half mile below Lagrange on the L. & N. railroad, is located Anita Springs, a health resort of some note, the waters of which are said to be beneficial to diseases of the kidneys. Also the Calcium-Magnesia Springs, whose waters are similar in character to the Anita Spring. The waters of each are shipped to Louisville daily, and furnish to the residents of Louisville a pure, health inducing water.

Oldham county is situated in the Seventh Congressional, Third Appellate, Twelfth Judicial, Twenty-first Senatorial and Fifty-second Legislative Districts.

OWEN COUNTY.

(Revised, 1907, by Hon. J. W. Cammack.)

Owen was the sixty-seventh county organized, and was formed in 1819 out of parts of Franklin, Scott and Gallatin. It was named in honor of Colonel Abraham Owen, who was a distinguished citizen and soldier and as aid-de-camp to General William Harrison fell bravely fighting for his country at the battle of Tippecanoe.

The general character of the soil of Owen county is limestone upon a clay foundation. Its soil produces corn, wheat, and all kinds of grasses that are raised in this section of Kentucky. It produces large amount of peaches and apples and small fruits. The county raises the best Burley tobacco, which brings the top of the market in all tobacco markets. There are a great many horses, hogs, sheep and cattle raised in the county.

Owenton, the county seat, is situated in the center of the county, and has 1,100 inhabitants. It possesses a graded school building, which cost \$12,000 and is run by eight teachers. There are enrolled three hundred pupils, eighty of which are from different sections of the county.

There are seventy-three common school districts for white pupils and eight school districts for colored pupils in the county. They are in flourishing condition. There are not enough teachers for the schools. The reason of the scarcity of teachers is that under the present school system the pay is not sufficient to attract young men and women to that profession. Owen county has not a foot of railroad, and by reason of that fact the county suffers very largely because its farm products can not be gotten to market easily.

The Kentucky river forms the western boundary of the county, and affords the people near the river access to the Louisville and Cincinnati markets for their farm products.

Quite a number of mineral springs are found in the county, the waters of which are of approved valuable medicinal properties.

The turnpikes have suffered a great deal by toll gates being taken off of them.

The indebtedness of the county amounts to \$200,000 and the constitutional limit for its indebtedness has been reached, so that only

fifteen cents to the \$100 of taxable property is now appropriated to maintain the roads and turnpikes, so that the roads and turnpikes are kept in repair by the old "warning in" system principally, which has proven a failure in the way of keeping the roads and turnpikes in good repair. There are three hundred miles of turnpikes in Owen county.

The largest streams in Owen county are Cedar, Big Twin, Big Indian, Severn, Elk, Eagle and Stevens' creek. They furnish a great deal of water power for propelling machinery. Most of the timber has been cut away. There remains but small quantities of the poplar, beech and oak varieties. There are many many patches of black locust growing throughout the county. The farmers are transplanting a great many black locust. The farmers are beginning to realize how necessary it is to have timber, and by little encouragement they would begin to cultivate and transplant great quantities of young trees.

Tobacco has been the principal product in the past, and the people have neglected their lands and in many instances have worked them too hard, but they are beginning to realize the great necessity of caring for their lands and are taking greater care of their lands than before. The land in Owen county has increased in fertility and desirableness at least ten per cent. within the last five years. The county abounds in mineral resources. Large deposits of lead and zinc ore are found in various localities. What is known as the "Kentucky River Fault" passes through the county near Gratz and Balls Landing and from this fault there are various fissures extending north and south through the county. There have been exposed in several localities in the county, and show large deposits of lead and zinc ore. The Ohio Lead Mining Co. is doing extensive mining about one mile from Gratz on the Kentucky river. The mineral is found in fissure veins. The mineral district comprises about one-half of the county. The principal work has been done on Twin creek by the Twin Creek Mining & Smelting Co., and near Gratz by the Ohio Lead Mining Company. What mining has been done in this county has been by inexperienced men, and the result of their work has not been very satisfactory to them. What seems to be needed in this county to make the mining business a paying proposition, is to have men experienced in mining with improved and up-to-date machinery and plenty of capital. Mining rights can be had at very low figures.

There are large quantities of limestone shale and clay that will make a very fine grade of Portland cement.

The county is situated in the Seventh Congressional, Fifth Appellate, Fifteenth Judicial, Twenty-third Senatorial and Sixteenth Legislative Districts.

OWSLEY COUNTY.

(Revised 1907 by W. T. Caywood.)

Owsley county is one of the middle-eastern Kentucky counties and was formed in 1843, and named after Governor William Owsley. The first settlement in this county was made in about the year 1797 by one James Moore who moved from Silver Creek, Madison county Ky., and settled about one-half mile east of the present town of Booneville. The early settlers were from the States of Virginia, North Carolina and Tennessee.

It is bounded on the north by Lee, on the east by Breathitt and Perry, and on the south by Clay, and on the west by Jackson. It is watered and drained by the South Fork of the Kentucky river, which flows through the center of the county from south to north, receiving from the east Buffalo, Wolf, Indian, Cow, Meadow, and Lower Buffalo creeks and from the west Sexton, Island, Doe, White Oak, Buck and Sturgeon creeks, all affording a perfect drainage and bountiful water supply.

The soil of the county is good and yields abundant crops. The county is underlaid with coal of the best quality; the finest veins of surface coal of both bituminous and cannel are found here and forty feet below the surface of the earth are found veins of the finest coal, nearly ten feet thick. This county is also underlaid with the best quality of gray and blue limestone suitable for building purposes, on any building. The mineral resources of the county are not yet developed because of want of proper facilities for transportation. Iron also abounds in this county, in fact, the wealth of the county is its mineral and magnificent timber supply. Probably one-half of the surface of the county is yet covered with forest of the very finest timber. Much has been rafted down the Kentucky river to market and saw mills within our own boundary have manufactured much of our timber into lumber. The tie business is receiv-

ing som attention at present and this year witnessed the beginning some attention and a number of stave mills are in operation. Still the finest supply of the best timber to be found anywhere is here in Owsley county. All the varieties of timber found in Eastern Kentucky are found here. Oak, hickory, sugar-tree, beech, yellow pine, yellow poplar, ash, black and white walnut, maple and chestnut.

Diversified farming is not engaged in, but fruit culture could be made a profitable industry here, were the facilities for reaching market better. All the fruit known to the latitude of this State grow well here and reach a high degree of perfection and the yield in favorable years is very great where attention is paid to fruit growing.

During the winter the South Fork of the Kentucky river is navigable for small steamers as far up as Booneville, the county seat of this county, and a few miles above it. For rafting and sending out barges with coal, it is navigable all the year round. There are no turnpikes in this county, the county or public roads are the common dirt roads and are kept in fair repair by overseers warning out hands, who are liable to do road duty, under the general road laws of the State. We have no railroads, but there is a line projected to run from Beattyville direct through the central portion of the county. The construction of this railroad has been under consideration for some few years past, but seems more favorable at present than ever before. If this road is constructed it will open up one of the richest counties in Eastern Kentucky, and give us facilities for marketing the mineral and timber products of the county. The Standard Oil Company has a pipe line passing through Owsley county and the development of the oil in this county is but a matter of time. Being in line with the oil fields of Pennsylvania, Owsley is thought by experts to have abundance of this product.

The staples of the farm are corn, wheat, oats, hay, and a little tobacco. A surplus of corn, wheat and oats is grown for market. Tobacco grows well in the county and could be made profitable.

The labor on the farm is performed mostly by native white and colored hands whose services can be had for from \$10 to \$15 per month, with board; hands for timbering are paid from \$12 to \$20 per month and board.

Lands for farming can be bought quite cheaply and large tracts of heavily timbered lands can be bought at a low rate.

The common schools of the county have been greatly improved

within the past few years, and are now in better condition than ever before. Good school houses are in every district, while the teaching forces are much greater than can find employment in the county. Each winter something near two hundred of the young men and women of Owsley county attend the professional schools, high schools and colleges of this and other States. The county has one academy situated at Booneville, which gives high advantages to many of the boys and girls of this and other counties.

This county is well supplied with churches in most parts and Sunday schools are held in almost every school house.

Booneville is the county seat, and is situated in the northern part of the county on the South Fork of the Kentucky river. It was named for Daniel Boone, who at one time had a camp near where the courthouse now stands.

The financial condition of the county is good, there being no bonded debt.

Capitalists are buying all the good timber and turning it into lumber and staves.

A narrow gauge railroad is being built from Tallega, on the L. E. road to Cow Creek, in this county, a distance of about twelve miles. This road alone will take out of this county at least 100,000 trees, besides other companies on the west side will take out as many more.

The tax rate for county purposes is forty cents on the \$100.

Owsley county is situated in the Eleventh Congressional, Fifth Appellate, Twenty-seventh Judicial, Thirty-fourth Senatorial and Seventy-first Legislative Districts.

PENDLETON COUNTY.

Pendleton county is situated in the northern part of the State, and is bounded on the north by Kenton and Campbell counties, on the west by Grant, on the south by Harrison, on the east by Bracken, and on the northeast for about three miles by the Ohio river. The county was organized in 1798 out of Campbell and Bracken counties and in 1900 had a population of 14,947.

The Licking river flows through the central part of the county, entering at the southeast corner and flowing out at Demossville, near the center of the northern boundary. The South Licking river enters the county at the southwest corner, and flowing northeast, joins the main Licking at Falmouth, near the center of the county.

The largest creeks are: Grassy creek, emptying into Licking river at Demossville, and draining the west and northwest part of the county; Fork Lick, emptying into South Licking at Morgan, draining the southwest part of the county; Kinkaid emptying into Licking at Catawba, and draining the east central part of the county; and Flower creek, emptying into Licking near Butler, and draining most of the northeast part of the county. Numerous other large creeks flow into the Licking, South Licking, and Ohio rivers.

The Kentucky Central Branch of the Louisville & Nashville Railway runs north and south through the central portion of the county, following the Licking from Demossville to Falmouth, and the South Licking to the southern boundary, a distance of twenty-six miles. The Chesapeake & Ohio railroad following the course of the Ohio river, crosses the northeastern part of the county, a distance of about three miles.

About one-fourth of the county is bottom land, along the rivers and larger creeks, and is very fertile; the remainder consists of smooth, rolling hills and long ridges, all susceptible of easy cultivation. The soil of the valley is rich alluvial, and the virgin soil of the hills is a black loam. The soil of the county covers a rich limestone clay sub-soil which rests upon stratified limestone, rich in phosphate.

There are 166,322 acres of land assessed in the county, only about 6,000 of which are in timber, though there is plenty of wood, fence posts and for farm use. The prices of land vary widely; bottom lands are worth from \$35 to \$100 per acre, hill lands from \$15 to \$50 per acre, except eroded hill lands which sell at \$5 to \$15 per acre. These eroded lands possess remarkable powers of recuperation, and when put in grass for a few years, are as good almost as any.

The county has 290 miles of macadamized roads, and 100 miles of good earth roads; with five wagon bridges across the two Licking rivers, and numerous smaller bridges across creeks, all affording excellent accommodation for travel. The roads are used by the public free of toll, except on one mile of turnpike near Demossville. The excellent condition of this road has encouraged the establishment of rural mail routes throughout the county, there being eighteen routes serving the citizens.

The county has a bonded indebtedness of \$132,500, the balance remaining unpaid out of a bonded indebtedness of \$200,000, incurred in the building of macadamized roads. There is a good two-story

brick court house, a brick jail and jailer's residence, and a farm upon which is located the county infirmary, a self-sustaining institution.

The county tax levy is fifty-seven and one-half cents on the hundred dollars, for all county purposes.

Falmouth, the county seat, is located on the Licking river at the mouth of the South Licking and on the L. & N. railway, forty miles south of Cincinnati, and sixty miles north of Lexington. The census population in 1900 was 1,134, which did not include a suburban population of about 500. But a part of this belongs to the city by an extension of the corporate limits in 1905. This is a beautiful town, situated in the valley of the two rivers, and is called the "Island City." The valley is fringed with hills, covered with blue-grass, and resembles a great amphitheatre. The streets are level and wide, and lined with luxuriant shade trees; and are kept clean and well lighted at nights. The city owns and operates an excellent system of water works, with two large reservoirs located on an adjacent hill two hundred feet above the town, thus affording unusual pressure for fire protection. The Western Union Telegraph and the Postal Cable Companies keep offices here, open day and night. There is a telephone exchange, having connection with nearly all the towns of the county, with many farm houses, and long distance connection with all large cities of the county.

The Falmouth graded and high schools maintain a high standard of education, and are patronized by many students throughout this part of the State. Its graduates are admitted without examination to most of the colleges of the country and to West Point Military Academy. There are two large and substantial brick school buildings, employing nine teachers for ten months in the year. There is also a school for colored children in the city, with two teachers.

There are nine church edifices, representing the Baptist, Methodist, Catholic, Presbyterian, Christian and Lutheran denominations, and three colored churches. The two banks are the Pendleton Bank, with a capital stock of \$50,000, and the Citizens' Bank, with a capital stock of \$32,500. There are two roller and grist mills, with a daily capacity of two hundred barrels each. There is one saw mill with a daily capacity of ——— feet of lumber. There are also a creamery, catsup factory and two harness and saddle factories. Falmouth is the trading center for a large surrounding territory, and supports numerous business houses with extensive trade. This is also an important leaf tobacco market, with a large purchasing

warehouse of the American Tobacco Company, and six other purchasing warehouses operated by independent leaf tobacco dealers.

The traveling public is well cared for by the three principal hotels having modern accommodation, also numerous boarding houses and restaurants. A substantial brick court house adorns the public square; and the town is growing in popularity as a market for stock on county court day. There are five rural mail routes starting from here, affording speedy and direct communication with a large surrounding territory. The "Pendletonian," a weekly newspaper, is published in the city, and the office, equipped with a power plant, does a large amount of commercial printing. The citizens of Falmouth have excellent accommodations for travel; the L. & N. Railway runs eight passengers daily to and from Cincinnati; and there are twelve macadamized roads and five dirt roads leading into the town.

Butler, with a population of about 800, is the second town in the county, situated on the Licking river, and on the L. & N. railway, twenty-nine miles from Cincinnati, and is the trading center of the northern part of this county, and of parts of Kenton and Campbell counties. A large and substantial wagon bridge spans the Licking here. There are four churches, representing the Methodist, Christian, Catholic and Baptist denominations. Butler has long enjoyed a reputation for educational facilities which are taken advantage of by students from the surrounding country, including parts of Kenton and Campbell counties. There is a graded common and high school, with four teachers employed nine months in the year. The Butler Deposit Bank has a capital stock of \$15,000. The large flour and lumber mills of C. C. Hagemeyer & Co., are located here and furnish employment for a large number of men. A stirrup factory ships its product all over this and to many foreign countries. A large dairying industry in the surrounding territory ships milk daily from Butler, and the products from several large peach, apple and plum orchards in the northern part of the county are shipped from this place. Four rural mail routes start from here. The "Pendleton Reformer," a weekly newspaper, is published at this place. There are two hotels.

Morgan, is situated on the L. & N. railway, eight miles south of Falmouth, and in the valley of the South Licking river at the mouth of Fork Lick Creek, among the most fertile lands of the county. It has a population of about one hundred, with two blacksmith shops,

two large general stores, two leaf tobacco warehouses, and the Farmers' Bank, with a paid up capital stock of \$17,000. There is a good graded school maintained six months in the year, with two teachers. There is one church here; and two rural mail routes start from this place.

Demossville, is situated in the northern part of the county, on the L. & N. railway, twenty-five miles from Cincinnati, and on the Licking river at the mouth of Grassy creek. It contains a population of about 150, has three general stores, a blacksmith shop, leaf tobacco warehouse, one church, and a graded school with two teachers, maintained six months in the year. Westerly from the town extends the beautiful valley of Grassy creek, containing a large body of fertile valley lands, well improved. Two rural mail routes start from here.

Boston Station, Catawba and Levegood are stations on the L. & N. railway, supporting stores, blacksmith shops, churches and schools. Carntown is situated on the C. & O. railway, thirty-one miles from Cincinnati, and on the Ohio river, and contains stores, a distillery, blacksmith shop, and is an important shipping point for coal and stock and farm products. Caddo, Gardnersville, Knoxville, Goforth, Doudton, McKinneysburg, Pindell and Mt. Auburn are inland villages where stores and shops are kept.

The principal agricultural product of the county is burley tobacco, about 4,000,000 pounds being produced annually. Corn, wheat, rye, oats, and most all field and garden products common to this climate, grow in abundance. Kentucky bluegrass is indigenous here and grows in luxuriance in every part of the county. Clover, timothy and orchard grass are also raised. In the last few years many farmers have been raising alfalfa, and find that it grows exceedingly well on the hill lands, yielding three to four cuttings annually, and one to three tons at each cutting. It is now raised extensively around Butler, where the dairying business has become an important industry.

Stock raising for a long time has been an important industry, and only improved stock is kept. The cattle consists of shorthorn and herefords. The hill lands afford ideal pasture for sheep raising, which is an important industry. Many car loads of hogs are shipped each year to the Cincinnati market, and quite a number of fine mules are raised and generally sold to local dealers and shippers. The standard-bred saddle and draft horses of Pendleton county receive recognition for their excellence wherever exhibited.

The excellent grasses growing here, and numerous springs and streams of pure water in abundance, make this a stock growing county that is hard to surpass. The farmers are getting their hill lands in grass and are raising more stock and less tobacco.

Perhaps no county in the State is better adapted to fruit growing though as yet, the industry is not extensive. In the northern part of the county are several large peach, apple, plum and pear orchards, from which large shipments are made to Cincinnati and other markets. Along the Ohio river a great many grapes are raised, and much of the crop is there manufactured into wine. Small fruits and berries grow well and yield good returns when grown for market. Poultry raising is an industry in this county of more importance than in most agricultural counties owing to its splendid market facilities.

There are seven distilleries in the county, all manufacturing old fashioned hand made sour mash whisky, and have combined capacity of about 5,000 barrels annually.

There are three large stone quarries, one on the L. & N. railway, near Menzies, and two on the C. & O. railway, and Ohio river near Carntown. Their product is a smoothly stratified and compact limestone, a very fine building stone and much used in Cincinnati and surrounding cities. Almost the entire northern part of the county is underlaid with the same material and affords excellent opportunities for numerous quarries.

Adjoining Butler, while a company was boring there for oil in the spring of 1905, a strong flow of gas was struck, but as yet there has been no disposition made of it. There is a well of Blue Lick Water at Boston Station, which possesses valuable medicinal properties. No further development of the property has been made than local use.

The grounds of the Pendleton County Fair Association are located adjacent to Falmouth, where the annual county fair is held. The meetings of this association have taken a prominent rank in the State, and have done much to encourage and improve the agricultural, horticultural and stock raising industries of the county. Pendleton county is becoming a popular summering country for city folks who want rest and recreation during the summer months. The streams and lakes afford good fishing and the good roads afford much pleasure in driving. Grant's Lakes, a notable summering place for camping parties, is located near Butler, where there are

several large artificial lakes close to the river, which are stocked with game, fish, and surrounded with picturesque and shady grounds. The grounds are occupied throughout the summer months by camping parties from various cities.

Pendleton county constitutes the Seventy-ninth Legislative District, and belongs to the Twenty-sixth Senatorial, Sixth Congressional, Eighteenth Judicial, Sixth Appellate Court, and Third Railroad Commissioners' District.

Postoffices: Boston Station, Butler, Carntown, Catawba, Demossville, Falmouth, Gardnersville, Goforth, Ivor, Knoxville, Levin-good, McKinneysburg, Morgan, and Peach Grove.

PERRY COUNTY.

Perry county was formed in the year 1821, and both the county and the county seat named in honor of Oliver Hazard Perry, the hero of Lake Erie. It is bounded on the north by Breathitt county, on the east by Knott, on the south by Harlan, on the west by Leslie.

The north fork of the Kentucky river is its principal water course and flows through the center of the county from south to north, and is joined by a number of forks and large creeks on either side; thus, it will be seen that the north fork and its tributaries flowing into it from the east and west form a most perfect system of natural drainage and furnish an abundant supply of water for the entire county and affords about 200 miles of navigable water.

The soil is freestone; very fertile and produces fine crops of corn, wheat, oats, potatoes, fruits, melons and most all kinds of grass.

There is practically an inexhaustible supply of timber; poplar, ash, walnut, birch, maple, chestnut, sycamore, lynn, hickory, cedar, etc., abounds in almost all parts of the county and of the finest quality. It is marketed in two ways, viz., by rafting and floating down the river to the various markets and by selling loose logs to log companies operating booms on the north fork and the Kentucky river. Timber land is worth from \$2 to \$10 per acre.

The county is very rich in mineral resources, such as coal, iron, copperas, etc. The coal veins are from three to seven feet in thickness and of the very finest quality of splint and cannel coal. The splint is clean, pure bituminous coal with very little fibres and no

apparent pyrites. The cannel coal is a pure, tough coal, with very little scales of granular pyrites between the laminae, very bituminous and leaves very little ash.

Hematite iron ores are found in abundance. Salt and gas are found in great quantities. There is natural gas at Hazard, the county seat, which, if developed would supply a considerable city. There are a great many fine sulphur and chalybeate springs in the county.

There are several saw mills which cut all the timber used by the natives. It is a splendid place for the establishment of chair factories, wagon factories, stave factories, and, in fact, for most anything that is manufactured out of wood, because labor and timber can be procured at a very moderate cost, and the water courses furnish ample facilities for marketing the lumber after it is manufactured.

The roads are ordinary dirt roads, maintained under the road laws of the State by surveyors or overseers, and of the kind fairly good and steadily improving. The labor employed is exclusively native and the prices range from \$10 to \$15 per month with board, and from \$15 to \$18 per month without board.

There are no educational institutions in the county other than the public schools. These schools are in much better condition than ever before; a marked progress having been made within the last ten years.

Hazard, the county seat, is an energetic little village situated on the east bank of the north fork of the Kentucky.

PIKE COUNTY.

(Revised 1907 by E. D. Stephenson.)

Pike county is situated in Eastern Kentucky and is bounded on the north and northeast by Martin county and the state of West Virginia, on the east and south by the state of Virginia and Letcher county and on the west by Knott and Floyd counties. It has an area of 1,100 square miles and a population of 25,000. It was formed in 1821 and named after General Zebulon M. Pike, an officer of the army in the war of 1812.

The county is drained by the Big Sandy river, the Tug Fork draining the eastern side and the Levisa Fork the western side of the county. Big creek, Pond, Blackberry, Peter and Knox creeks are the principal tributaries of the Tug Fork and Island, Shelby, Marrowbone and Elkhorn creek and the Russell's Fork are the principal tributaries of the Levisa. Johns creek, a tributary of the Levisa Fork, extends through the center of the county and drains a large area. The natural drainage of the county cannot be excelled and the water supply is abundant. The Sandy river and its tributaries affords plenty of water to float the timber out of the mountains to market at Catlettsburg on the Ohio.

Fine seams of coal are found in all sections of the county, there being from two to four workable seams ranging from four to six feet in thickness and in some sections where there is coking coal, the coke seam runs from six to eleven feet thick. The best coking coals known is found. The coal is also of a superior quality for steam and domestic purposes.

There is plenty of timber in the county, consisting of the several varieties of oak, beech, pine, walnut, poplar, cucumber, basswood, hickory, ash, chestnut, sugar and maple. The Levisa Fork of the Big Sandy river is navigable as far up as Pikeville, 105 miles south of Catlettsburg at the mouth of the river, and there has been several locks constructed along the river by the government for its improvement and others are being built at this time. When these locks are completed to Pikeville the river can be used for floating coal barges out to the Ohio, thereby assuring reasonable freight rates for coal shipped from this section.

The Chesapeake & Ohio Railway has been completed to Elkhorn City, at the mouth of Elkhorn twenty three miles above Pikeville and there has also been a branch built up Marrowbone creek eight miles to Hellier, Ky., to develop coal lands leased by the Big Sandy Company.

The South & Western Railway Company is now constructing a line of road from the Atlantic Seaboard through the Breaks of Sandy to connect with the Chesapeake & Ohio at Elkhorn City. When this road is completed it will give the coal fields of Pike county an outlet to the seaboard and secure for this section a coal market of the south that is now being controlled by the operators in the West Virginia coal fields. Within the last few years there has been a number of coal operations put in along the C. & O. railway

viz: Hamlack Coal Company, The Kewanee Coal Company and on the Marrowbone branch, Henry Clay Coal & Coke Company, Elkhorn Consolidated Coal & Coke Company, Marrowbone Coal & Coke Company, Pike Coal & Coke Company, Big Branch Coal & Coke Company and Greenough Coal & Coke Company. All the companies operating on the Marrowbone branch are lessees of the Big Sandy Company, which owns 130,000 acres of coal land and is developing its property as fast as transportation facilities can be secured. The N. & W. Railway extends along the eastern side of the county in the state of West Virginia and there has been a number of coal operations put in in the county along that line of railroad, viz: Borderland Coal Company, Mouth of Big Creek, Pike Colliers Company and Blackberry Coal & Coke Company mouth of Blackberry creek, Freeburn Coal & Coke Company, mouth of Peter creek, Vulcan Coal Company, mouth of Barren Shee, Majestic Coal Company, Poplar creek. The Freeburn Coal Company have a railroad bridge across the Tug Fork and is now constructed up Peter Creek two miles. This is the largest operation in Pike county and has over five thousand acres of coal land under development.

The Northern Coal & Coke Company owns about fifty-five thousand acres of fine coal land in the county but it has not as yet developed any of its property. The Northern owns a greater part of the famous "Elkhorn Coking coal." There are thousands of acres of fine coal and timber lands owned by the citizens that can be purchased by investors at reasonable prices. Practically all of the land in this county is in the actual possession of the citizens and has been for many years, thereby securing to investors good titles.

The Dickerson & Buchanan Railroad has been built up Grassy creek, a tributary of the Russell's Fork, by the Yellow Poplar Lumber Company, to its timber lands on Grassy creek in Pike county and Buchanan and Dixon counties, Virginia. It will take from ten to fifteen years for the company to mark the timber made accessible to market by this railroad.

Pikeville is the county seat of Pike county. It is situated near the center of the western border of the county on the Levisa Fork of the Sandy river. It is an enterprising little city of 2,000 inhabitants. It has all modern improvements such as water works, electric lights, etc. It has a court house that was erected some years ago at a cost of \$30,000. There are also several modern buildings viz: The Pike Hotel, a building of 52 rooms, steam heated, and with all

modern conveniences; Pikeville National Bank building, a handsome three-story stone front building; the Campbell-Auxier building a handsome concrete building with all modern improvements that has been finished in the last year.

The Pikeville Collegiate Institute of this place, established by the Ebenezer Presbytery about 1886, is one of the strongest educational institutions in Eastern Kentucky and one of the best institutions of its class to be found anywhere in the south. It is also well known and patronized by portions of West Virginia and Virginia. It has real estate and buildings of the value of about \$75,000.

Pikeville has five churches, viz: Presbyterian M. E. and M. E. South, Christian and A. M. E. It has two national banks, with capital of \$50,000 each, and a wholesale grocery.

Pike county is situated in the Tenth Congressional, Seventh Appellate, Twenty-Fourth Judicial, Thirty-third Senatorial and Ninety-Fifth Legislative Districts.

POWELL COUNTY.

(Revised, 1907, by G. M. Derickson.)

Powell county was formed from parts of Montgomery and Clark counties in 1852, and is bounded on the north by Montgomery and Menefee, on the east by Wolfe and Lee, on the south by Estill, on the west by Clark. It was named in honor of L. W. Powell, a governor of Kentucky. The county is about twenty-five miles in length from east to west, from ten to fifteen miles wide from north to south. Red River is the principal water course, and it is not navigable except for the purpose of floating timber. It flows through the county dividing it in nearly equal portions north and south. There is fine water power at Clay City, where there was once a large rolling mill and nail factory, and a large flouring mill, all run by water power. The water power is not used for anything now.

The soil is of a rich sandy loam and very productive, and yields large crops of corn, rye, oats, clover and timothy. There is a good deal of good land on the small water courses suitable for agriculture and grazing. The principal timber is poplar, oak, beech, ash, pine, walnut, and hickory. The walnut and poplar timber has all been nearly cut and

the oak is being cut and shipped very fast. There is a canning factory at Stanton, the county seat, and there will be a cement plant erected in the near future near Stanton for the purpose of making Portland cement. We have one roller mill at Clay City and several grist mills used for grinding corn. There is a large planing mill and spoke factory at Clay City, doing a flourishing business. The county has twenty-five miles of railroad, the L. & E. running the entire length of the county, giving good railroad facilities.

There are no turnpike roads in the county, and the dirt roads are kept in a reasonable repair under the general road law of the State. There is an abundance of iron ore, coal, fire clay and the very best material for manufacturing of Portland cement. The natural scenery is said to be the best in the State. There are three steel bridges spanning Red River, one at Rosslyn, one at Clay City, and one at Watlers Ferry.

The average wages for farm labor is \$1 per day with board. For work in timber the price is \$1.50 per day. There are two common graded schools in the county, one at Stanton, the county seat, the other at Clay City, which are well attended. The schools throughout the county are in good shape and are well attended.

The best river bottom land is worth from \$50 to \$75 per acre. The cleared land on the small water courses range from \$10 to \$50 per acre, the mountain land uncleared is worth from \$2 to \$20 per acre.

Following is the names of the post offices in the county: West Bend, Waltersville, Clay City, Vaughn's Mills, Iron Mound, Union Hall, Virden, Furnace, Knowlton, Stanton, Rosslyn Sage, Haystack, Filson, Lombard, Slade, Knox, See, Xena, Vinton. There are no free rural routes in the county.

Powell county is situated in the Seventh Appellate District, Tenth Congressional District, Twenty-fifth Judicial District, Twenty-ninth Senatorial District and Seventy-third Legislative District.

PULASKI COUNTY.

(Revised, 1907, by Judge N. L. Barnett.)

Pulaski is a wonderful county. It was formed in the year 1798 from parts of the counties of Green and Lincoln. It was named in honor of that great Polish patriot, Count Pulaski. For a time the seat of justice was not permanently located. The building in which the first court

Seventeenth Biennial Report Bureau of Agriculture.

was held is still standing and is in a remarkable state of preservation. This house is what is commonly called a single log house and was built about the year 1798, the court being holden about the 10th day of July, 1799. The records of the circuit court show that the first penal offender indicted in the county was arraigned for profane cursing and swearing and fined a few pounds of tobacco. Pulaski is the largest county in the State. It is some forty-eight miles in length, and forty-one in width. Pike county was at one time larger, but by reason of recent surveys of her boundary lines, by which much territory was added to her borders until at present she has about thirty-six square miles more than Pike county. Pulaski is well watered. The Cumberland River is the principal stream, and runs across the southern part of the county, cutting it into two unequal sections. Rockcastle River on the east, the Big South Fork of Cumberland River on the southwest, are important streams. Buck Creek, Fishing Creek and Pitman Creek flow almost entire length of the county from the northern boundary line, until they intersect with Cumberland river. Besides these there are many other perennial creeks and streams. These streams could furnish power for manufactories beyond conception. Especially is this true of Cumberland River, for Cumberland Falls, if properly harnessed, would furnish power sufficient to operate all the machinery in the county and furnish electric lights for the cities of Somerset and Burnside. Pulaski has a diversified surface. Her river bottoms, table lands, hills and mountain tops make it possible to grow with profusion, and of the finest quality, all the fruits common to the temperate zone. Generally speaking, the soil is what is commonly called limestone and sandstone. The limestone is considered the better soil, and covers the most of the county, and underneath is found a red clay subsoil. The principal crops are corn, wheat, oats, rye and grass. With a little more skill in farming and a more thorough knowledge of modern methods, with her other resources Pulaski county could be made in a short time one of the wealthiest counties in the State. Gas and oil are known to exist but have not been developed. There are fine forests of valuable timber, and the coal is practically inexhaustible. The latter is being mined in the southern and eastern parts of the county. In the early settlement of the county salt was manufactured in large quantities, and lead mines have been found in several places but never worked. It has been handed down by tradition through the Indians and the old white settlers that in certain localities near the Cumberland River, that silver was once mined by the aborigines long before the white settler made his appearance.

The Cumberland River and the Cincinnati Southern Railway furnish transportation. A new railroad is under construction, running northeast and southwest through the southern part of the county, which, when completed, will open up one of the richest coal fields in the State. During six months of the year Cumberland River is navigable up to Burnside, and with two locks and dams could be made navigable all the year round to the mouth of Rockcastle River.

The larger creeks are spanned by many fine steel bridges and the construction of turnpikes is going on to some extent, and the proposition for better roads and more of them is being strongly agitated. The county is out of debt and has been for years, and pays all claims when allowed. Somerset, centrally located on the Cincinnati Southern railway, is the county seat. It is a city of the fourth class and with her suburbs is a city of about 10,000 inhabitants. During the last three years Somerset has had a marvelous, steady, healthy growth. It has become a great shipping point. No city in Southern Kentucky has equalled Somerset in growth and prosperity. Her citizens are justly proud of her graded school system. Three large and commodious brick buildings accommodate the 1,520 children that attend her schools. The high school building and the public library are not surpassed by any other in the State.

Burnside on the Cumberland River, is a thriving commercial and manufacturing city of the fifth class. Science Hill, Eubank and Ferguson are thrifty towns of sixth class.

The population of Pulaski county is about 40,000.

There are 158 white common school districts and nine colored districts in the county. Many of the white schools are graded and all of them have modern buildings and up-to-date furnishings with a district library. There are 12,299 white children and 515 colored enrolled in the county. Whiskey was voted out of the county in 1906, and there is not an open saloon in the county.

The average price of improved farming land is about \$15 per acre; unimproved, \$8, and wild lands, \$1 to \$3. All farm labor and most of the mining is done by natives. There are few foreigners and no colonists at all. Labor is high and it is difficult to employ farm hands at less than a dollar per day.

Medicinal springs are found in many parts of the county. Rockcastle Springs and Mt. Sterling Springs in the eastern part of the county are noted health resorts. Pulaski has some very fine scenery. In the south-

ern part of the county is a natural bridge with a clear span of 100 feet, and 60 feet high. At one end of the bridge is a dome fifty feet deep and extending from abutment to abutment about 300 feet. In the near neighborhood is the "Gulf" and caves, precipices, and miniature canon.

Pulaski is not without her history. The struggles of the early settlers with the Indians were many and severe. Within her borders during the civil war of 1861-5 two battles were fought, one of great importance to the federal cause, that of Mill Springs. But her struggles with adversity are all over. With her honest, sturdy, sober, moral christian population; her churches and school houses; her vast farming lands and orchards; her inexhaustible mineral wealth; her pure water and pure fresh mountain air, she is moving forward with gigantic strides to meet the sunlight of the golden age of the twentieth century, and with the promise of long life and continued prosperity she invites capitalists to invest their means in the development of her resources, and all honest, industrious home-seekers to become her adopted children.

Pulaski county is situated in the Eleventh Congressional, Third Appellate, Twenty-eighth Judicial, Seventeenth Senatorial and Sixty-eighth Legislative Districts.

ROBERTSON COUNTY.

(Revised, 1907, by Judge M. F. Chandler.)

Robertson county is one of the smallest counties in the State; was formed in 1867, from portions of Mason, Fleming, Nicholas, Harrison and Bracken counties, and was named in honor of Chief Justice Robertson of the Court of Appeals. It is in the northeastern part of the State, with only one county between it and the Ohio River, and is bounded on the north by Bracken county, on the east by Mason and Fleming, on the south by Nicholas, and on the west by Harrison and Bracken. The surface of the county is generally rolling, yet none of the land is too steep for cultivation; along the larger stream are bottom lands of unsurpassed fertility. The soil in the entire county is of a limestone formation with a clay subsoil, enabling it to retain moisture and where it has not been abused it is productive. The principal crops raised in the county are wheat, tobacco, corn, oats and hay. Robertson is naturally a grass county; timothy and clover as a hay crop, and blue-

grass for pasture, where given a chance, are unsurpassed. While the yield of wheat and tobacco per acre is not so large as in some other counties, yet their quality is far above the average in the State.

Main Licking on the southern border of the county, the North Fork on the west and north, and Johnson creek running diagonally across the southern part of the county are its principal streams, each of which affords available water power. Running into these streams, and fed and kept up by unfailing springs, are Five Lick, Salt Lick, Bee Lick, Helm, Wolfe, and Island Runs, Cedar, Indian, Greasy and West creeks, furnishing an abundance of stock water, except during seasons of extreme drouth. Thus it will be seen that this county is especially well adapted to stock raising.

There are no large tracts of timber in the county and the supply may be said to be limited to the necessities and demands of the county for fuel and repair to building and fencing.

There has been a very decided improvement in farm methods in this county in the last ten years. Large quantities of grass seeds have been sown, washes and gulleys filled, and grassed over, old worn-out lands reclaimed, good houses, comfortable and convenient stock and other barns built; better farm machinery and other implements used, and the lands better fenced and cared for generally. Naturally following these improvements there has been no less marked improvement in all kinds of stock until now Robertson not only "carries off" from all home and surrounding fairs her portion of "blue ribbons," but sells to local and foreign buyers some of the best horses and cattle found in the State. We have a good turnpike system with more than 80 miles of turnpike traversing different parts of the county, and all leading to the county seat. The free pikes and dirt roads are supposed to be, and it is to be hoped that they will be some time, kept in good condition by the county. The educational facilities of the county are good; every school district has a good frame school house, and five months of free school each year; and in many districts this is supplemented by three months of "pay school," supported by local taxation. In Mt. Olivet, the county seat, are two flourishing public schools, one white, the other colored.

The prevailing Christian denominations are Disciples, Baptists, Methodists and Southern Methodists, all of which have good church edifices at the county seat, and some of them at other places in the county. The colored Methodists also have a house of worship at Mt. Olivet. We have three good hotels in Mt. Olivet and two weekly newspapers

are published. There is another matter that should not be overlooked and of which the people of this county are very proud. There is not now, and has not been a licensed saloon in the county for over twenty years, and at every attempt during this time to do away with the local option law by vote of the people the majority in favor of the law has increased.

Oil and natural gas exists in the county, but have never been developed. During high waters small steamboats have ascended main Licking from its mouth at Covington and Newport, to the Lower Blue Lick Springs, a distance of about seventy miles. Robertson is destined to be a great fruit county. Apples, peaches, pears, plums, cherries, all do well, and the damson is scarcely excelled anywhere.

This county has no railroads, but one has been located and surveyed for sixteen miles through the county. The bonded indebtedness is not large, all for internal improvements, building turnpikes, and is being paid off as fast as the bonds become due, and the credit of the county is consequently good.

Land is worth from \$25 to \$100 per acre. There are but few foreigners in the country. Farm labor is performed by native white and colored hands whose services can be obtained for from \$5 to \$25 per month with board.

Mt. Olivet, the county seat, is situated in the northern part of the county and has a population of about 500. It has a good brick court house, a good jail, five churches, a good roller flouring mill, six tobacco warehouses, two public schools, and twelve stores.

Robertson county is in the Ninth Congressional, Sixth Appellate, Eighteenth Judicial, Thirtieth Senatorial and Eighty-sixth Legislative Districts.

ROCKCASTLE COUNTY.

Rockcastle county is situated in southeast-central portion of the State, in foothills of Cumberland mountains, 129 miles from Louisville. It was formed in 1809. Is bounded by Garrard, Madison, Jackson, Laurel, Pulaski and Lincoln. Rockcastle river flows along its southeastern boundary; Dicks river is formed in northwestern portion of county by the junction of Boone's Fork and Negro creek, which, with three branches of Skaggs creek, Round Stone, Brush, Clear, Wolfe, Brushy creek's tributaries, the county is well

watered and drained. No finer springs of water of better quality can be found within the State, and it is here in abundant quantities the year round.

The soil of the county is very strong, and quite productive, its surface is varied in the northeast, the southeast portion is rough, very broken and hilly; the bottom lands of the river and creek valleys in this section are very fertile. In western portion the land is level and undulating and rich.

There is yet a fairly good timber supply, such as oak, hickory, gum, ash, sugar tree, walnut, poplar, basswood, buckeye, etc. There is yet some tan bark though the supply will be exhausted in a few years.

Diversified farming is not engaged in only for domestic uses, though all vegetables do well, especially tomatoes which for luxuriance of foliage and product cannot be excelled. A canning factory will be established next season especially for packing tomatoes.

The roads are being improved each year, being worked under the general road law.

The L. & N. railroad passes through the county from northwest to southeast, through central portion, and its K. C. division runs from north to south through eastern part. A five mile branch run from Brush Creek Station up to coal mines at Johnetta. There are three coal companies with mines in active operation.

A building stone quarry at Langford and one at Wildie do considerable shipping of quarried and sawed stone to various States, including the north and northeast. Two other quarries produce ballast and concrete. We have vast hills of limestone, freestone, sandstone and hail-grit of the finest quality.

Two miles east of Mt. Vernon is located immense ledges of Portland cement stone. Lithograph stone is also found here. Kaolin, or potter's clay of a fine quality is found within the limits of Mt. Vernon. Fire clay in vast quantities is found in central and eastern portion of the county. Many cars have been shipped to Middlesboro and other brick works. Many huge hills of finest sand are here. Iron and lead have also been found.

The granite brick works at Dudley are doing a big business in making sand lime-brick. A flourishing business is being done in the manufacture and shipping of lime. One of the kilns here is burning natural gas, which is piped two miles from a recently drilled well. Other wells will be utilized. Oil in small quantities has been found

in some of the wells but no deep wells have yet been drilled but will be at an early date, when no doubt oil will be found in paying quantities.

Among the natural wonders is the sinks of Round Stone where a large creek sinks under a mountain and rises again four miles below in the "boils" at Livingston. Great Saltpeter Cave is situated in the east, from which material was gathered to make powder during the war of 1812.

The county is well provided with transportation, mail, telegraph, and telephone facilities.

The staple products of our farm are corn, wheat, rye, oats, potatoes and sorghum. A movement is on foot to can and export steam made sorghum which has proved a delicious product and sought for by many who will eat no other sweetness. Clover seed raising is proving profitable. Tobacco, especially the finer grades, does well in our soil. Tobacco raising has received but little attention, though probably 30,000 pounds of the best quality was raised last year. Stock raising receives considerable attention and the grade is being constantly improved. Sheep raising pays well.

The county has a good courthouse and other buildings; and is well supplied with school houses and churches. The Brown Memorial School has a good college building, large dormitory and other buildings in Mt. Vernon, the county seat. A splendid school is maintained nine months of the year. An industrial department has just been added to this school.

The county's population is 13,000. Has no debt. Tax rate is 30 cents.

Good farm lands can be bought cheaply and splendid tracts of timbered land can yet be had at reasonable prices.

Rockcastle county is in the Eighth Congressional, Fifth Appellate, Seventeenth Senatorial, Seventieth Legislative and Twenty-eighth Judicial Districts.

ROWAN COUNTY.

Rowan, the one hundred and fourth county, was formed in 1856, out of parts of Fleming and Morgan counties, and named in honor of Judge Rowan, the distinguished jurist and United States Senator from Kentucky, from 1824 to 1830. It is bounded on the north

by Lewis, east by Carter and Elliott, south by Elliott, Morgan and Menifee, and west by Menifee, Bath and Fleming counties. The Licking river and Triplett creek, with their tributaries, drain the whole of the county. The Licking forms the southern and western boundaries for a distance of about 100 miles. The Licking is navigable for small boats during the spring season while water is high.

The soil of Rowan is generally fertile, producing fine crops of corn, oats and always extensive crops of watermelons of the very finest quality. Grasses are raised in abundance; such as timothy, clover, herd grass and millet are the principal grasses. Where tobacco has been raised the soil produces a very fine and abundant quality.

The county has been tested to some extent for oil and said to be a very rich field. Considerable oil development has recently been done and the Ragland field is very productive.

In the county are located two very large and extensive mills for sawing and dressing stone. There are a number of stone quarries containing from six to eight strata of stone ranging from three inches to three feet thick. These quarries dress and ship stone to all parts of the United States. These quarries are located one at Freestone, called the "Freestone" quarry, and the other at Rockville, called the "Bluestone" quarry. The stone produced from the quarries of this county are the very finest for building and bridge purposes, owing to its durability.

The forests of the county abound with extensive timber of the oak, poplar, pine, walnut, ash and many other species of timber valuable for building purposes. The lumber trade is one of the most extensive industries of the county, lumber being shipped in both rough and dressed forms. Three very large mills are located in the county for manufacturing lumber, besides the numerous portable mills scattered all over the entire county.

There are a number of very extensive unbroken forests in different portions of the county and containing all kinds of valuable timber, and can be purchased at from \$4 to \$6 per acre.

The county has a good system of public dirt roads, kept up by the county and the citizens living along said roads. There is no taxation for roads in the county.

There are eighteen miles of railroad in the county running from east to west, known as the C. & O. There have been about six

miles of narrow gauge road built in the county known as the Triplett & Big Sandy railroad.

The improved farm lands of the county are very productive and sell for from \$5 to \$50 per acre. The farmers are improving their lands by fertilizers.

Morehead is the county seat of Rowan, and is situated midway between Lexington and Huntington, on the C. & O. railroad. It has about 1,200 inhabitants, and contains a number of large dry goods and other stores, many of them doing a business from \$20,000 to \$50,000 a year. There is also located in Morehead a college known as "The Morehead Normal" and has connected with it a very large boarding hall, which renders the expense to students very small. Morehead has three churches, viz.: Baptist, M. E. South and a union church house.

The county has no indebtedness, either bonded or otherwise. Her rate of taxation for county purposes is fifty cents per hundred.

Rowan county is situated in the Ninth Congressional, Sixth Appellate, Twenty-first Judicial, Thirty-fifth Senatorial and Ninety-fourth Legislative Districts.

RUSSELL COUNTY.

Russell county was formed from the county of Adair in 1825. It lies in the southern portion of the State, being separated from Tennessee by Clinton and Wayne counties. In its topographical features it is somewhat intermediate between the mountainous section of the eastern and southeastern parts of the State, and the comparatively level land of the western. There are no mountains in Russell, but the surface is broken and hilly. The Cumberland river flows through the southern part of the county for a distance of 50 miles or more. This stream is ordinarily navigable for steamboats four or five months of each year. As this county has no railroads or turnpikes, the navigation of this river is a great convenience to the people of the county, as it is their main reliance in getting their products to market, though at the time boats can ply the river the roads are in their very worst condition. Could this river be locked and dammed it would aid more than anything else in the development of the county. At the time the steamboats are running our merchants supply themselves with the heavier articles of merchan-

dise. During this time, too, the agents of the various commercial fertilizer companies, taking advantage of the cheap rates to be obtained then, ship the large quantities of fertilizers that for the last years our farmers have been using.

The soil along the Cumberland river, especially the first bottoms, is very productive; so also is that of the lower course of its tributaries. The soil of the uplands is not nearly so good, but by the use of commercial fertilizers and manures fairly good crops are produced. Nowhere in our county are our farmers more energetic and up-to-date than those cultivating the uplands. They are using improved farming implements, and improved methods of farming are getting in vogue among them.

Wages are low; on the farm by the month from \$10 to \$15; average about \$12; this includes board; by the day from 50 to 75 cents. Very good carpenters can be employed for \$1 per day.

Corn is the great staple of our farmers, especially of those living on Cumberland river and the creeks running into it. Farmers of recent years have been giving much attention to wheat. Scarcely any farmers in the uplands think now of sowing wheat broadcast, but have it drilled and fertilized. Great quantities of millet are produced every year in this county. Clover and grass have not had the attention from our farmers that their importance demands. The cultivation of stock peas is beginning to receive much attention in some parts of the county. A few of our farmers in the southern part of the county find tobacco to be a profitable crop, but as a general crop for market there is a comparatively small amount produced. In the northern part of the county bordering on Casey and Pulaski some of the farmers cultivate sweet potatoes for the market and find it to be a profitable business.

During the time of steamboat navigation the farmers living on the Cumberland river export their hogs and corn, or rather their surplus of corn, as they prefer feeding that to stock, especially hogs, which, with cattle, sheep and mules, form the chief articles which the farmers ship from the county. One of the most important industries in the county is the raising of fowls, especially chickens. The shipment of chickens, turkeys and eggs is the most important made from the county.

The uplands of Russell are naturally adapted to fruit, especially the apple, yet the codling moth and other insect pests have so preyed

on our orchards and their fruit that the fruit crop has become a failure.

This county was once one of the most finely timbered counties in the State, but great quantities of the best timber have been ruthlessly destroyed; vast quantities have been rafted down the Cumberland river; much has been sawed here and shipped; a great deal sawed here and used in making good comfortable houses for people and barns for their stock; and large quantities sawed for fencing. A few years ago a quantity of hickory timber was shipped from here in form of spokes for vehicles. A great deal of white oak timber of the county has been and is now being manufactured into staves, and is giving employment to a large number of men at good wages. The timber most in demand now is white oak and poplar; the white oak for staves and fencing, and the poplar for rafting and for being sawed into planks in our country saw mills. Our best timber has been used, but there is still much timber of pretty fair quality in the county. The walnut is almost, if not entirely gone; the largest and best poplars, as before indicated, have been felled for rafting and for use at the country saw mills, but there are considerable quantities of poplar trees yet, though somewhat undersized. A few years growth on these will make them of merchantable size. Notwithstanding the heavy demand being made on the white oak, there is still a large quantity of that in the county. There is a great deal of black oak in the county, there not having been much demand for it yet. Considerable quantities of chestnut is still to be found on the uplands; cedar, too, on the river and creek hills. There is now not much pine in this county, some in the northern part bordering on Casey and Pulaski and along the hillsides of our water courses. Ash, maple and wild cherry are found in limited quantities; and along our water courses is found a great deal of beech, quite valuable some years for its mast. Though a few years ago hickory was shipped from here in large quantities, there is still a fair amount left.

There are a few distilleries, as mentioned before, engaged in making apple brandy. Three corn distilleries. There are several mills, mostly water power, some of which grind corn only, others both corn and wheat; two of the last mentioned are roller mills. There are several saw mills in the county, the most of which are run by steam. In addition to these are some shingle machines, planing mills, two cotton gin and wool carding factories, four roller mills in county.

Perhaps the most remarkable natural curiosity in Russell county is what is known as the Rock House. On Cumberland river, about two and one-half miles below the village of Creelboro, there is an opening clear through the cliff, forming an immense chamber.

Russell Springs has a population of about 350 people, and is a great summer resort. Has one roller mill, two hotels, two livery stables, three blacksmith shops, one wood shop where all kinds of lumber is prepared for building purposes; a nice fair grounds, three churches—Methodist, Baptist and Christian, one college building with a capacity for three hundred pupils.

Jamestown, the county seat, has a population of 250 people, two church organizations, one Union church building. Tax rate for county purposes is fifty-five cents on the \$100 valuation, and \$1.25 poll.

The common schools of this county are in a fairly good condition. There are no colleges in the county, but each year when the public schools close, there are usually some good private schools taught.

The mineral resources of this county are undeveloped. Oil and gas have both been found.

Russell county is situated in the Eleventh Congressional, Third Appellate, Twenty-ninth Judicial, Sixteenth Senatorial and Forty-third Legislative Districts.

SCOTT COUNTY.

(Revised 1907 by Arthur Yager.)

Scott county was one of the first to be organized after the admission of Kentucky into the Union, being formed in 1792 the same year that Kentucky became a State. It was named in honor of Gen. Charles Scott, a distinguished officer of the Revolutionary War, who afterwards became Governor of the State. The county is situated in the north central part of the State, and is bounded on the east by Harrison and Bourbon; on the south by Fayette and Woodford, and on the west by Franklin and Owen, and on the north by Owen, Grant and Harrison counties. The general topography of the county is much like that of the other bluegrass counties; gently undulating in the south, and rising into hills in the north. It is well watered and drained by two distinct systems of

water courses, both of which are tributaries to the Kentucky river; and the basins of which are sharply contrasted in topography, and in the character and fertility of the soil. The surface of the county is almost equally divided between these two geological formations,—the southern half of it sloping toward the west, and draining into the Elkhorn river and its tributaries. This part of the county is in the area of the Lexington limestone, and possesses in a high degree the fertility and beauty that has made the geological stratum famous the world over. The northern part of the county lies in the Eden Shales, and slopes toward the northwest, draining into Eagle and Caney creeks. It is much more rugged and broken in appearance and much less fertile in the character of its soil. The timber supply of the county is practically exhausted—nearly all of the beautiful woodland pastures having been recently cleared up, for the purpose of cultivating tobacco.

There is in the western part of the county a considerable vein of lead ore, which is now being mined to some extent, and promises to develop into an industry of some importance. Other veins of the same mineral have recently been opened in other parts of the county and have good prospects of making paying mines. There are besides, inexhaustible quantities of excellent limestone underlying the soil in all parts of the county, which is of great value for building purposes and for making roads and streets.

None of the streams of Scott county are large enough to be navigable, even by the use of locks and dams; but they might be made very useful for water power, for mills and factories. Scott is, in the main, an agricultural county, and its chief importance lies in the large and varied products of its farms. Almost all the crops known to this climate are grown with great success, and in some of them, this county stands first in the list. Tobacco, corn, wheat, hemp and hay are raised in great quantities, and the minor grains and grasses are by no means neglected. In white burley tobacco the county is second to none, in the whole white burley district, and the growers of this crop have organized a company and built a large tobacco warehouse to handle the product.

Much attention is also given to stock raising; and horses, mules, cattle, sheep and hogs are shipped out of the county, in great numbers.

There is also a considerable and growing trade in turkeys and other poultry, large quantities being exported to the Eastern markets.

Diversified farming, especially in the direction of market gardening and dairy products, has been greatly developed of late—the proximity of large city markets making these industries quite profitable.

There is comparatively little fruit produced, perhaps less even than formerly, owing doubtless to the fact that modern methods of protecting the orchards from the ravages of insects, have been generally neglected.

Scott is well equipped with transportation facilities. There are more than fifty miles of railroads in operation within the county.

The Queen & Crescent runs through the extreme length of the county, from north to south; while the Frankfort & Cincinnati traverses its entire breadth from east to west. In addition to these, the Louisville Southern and the Louisville & Nashville operate railroads in the county, while the Lexington & Georgetown Traction Company runs an electric line between these two cities. The county has a splendid system of macadamized roads, consisting of about 350 miles of turnpikes, radiating from the county seat, to every part of the county. These roads were originally built by turnpike companies, aided by county appropriations, but the toll gates have all been removed, and they are now maintained public expense, free from tolls. Upon all these roads, run the free delivery mail wagons, of the Federal Government, carrying mail matter to the doors of almost all of the farmers of the county. The county is also traversed by a complete network of telephone lines operated by the East Tennessee Telephone Company.

In addition to the county seat, there are several other towns of growing importance, the chief of which are Sadieville, Stamping Ground and Newtown.

In the matter of educational facilities Scott county stands second to none in the State. In addition to a complete system of common schools, maintained throughout the county, Georgetown the county seat, is one of the greatest educational centers in Kentucky. It has for more than seventy-five years been the seat of Georgetown College—one of the oldest and most successful institutions of learning in the Mississippi Valley. According to the census of 1900, the population of Scott county is 18,076. Georgetown is the county seat. It is beautifully situated in the south central portion of the county, near the south bank of North Elkhorn river. It has four railroads, and is located at the center of the turnpike system of the county.

604 *Seventeenth Biennial Report Bureau of Agriculture.*

It is a flourishing town of about five thousand people, with splendid schools, handsome churches, and a progressive and enterprising people. It has for many years possessed all the convenience of a modern city, and has of late leaped into great importance as a manufacturing center. In the outskirts of the city, upon the banks of the North Elkhorn, the Indian Refining Company has built up one of the largest independent oil refineries in America. It has invested large capital and employs hundreds of laborers, and has undertaken a series of improvements and additions, which when completed will make it perhaps the largest manufacturing enterprise in the State of Kentucky.

Scott county constitutes the Fifty-eighth Legislative District, and forms a part of the Seventh Congressional, Fifth Appellate, Fourteenth Judicial and Twenty-second Senatorial Districts.

SHELBY COUNTY.

Shelby county was named in honor of the first governor of Kentucky, Gen. Isaac Shelby. It is one of the largest and best counties in the State. All of the county is good bluegrass land, and is adapted to raising hemp; two-thirds of the county is adapted to raising Burley tobacco. The reputation which the county has gained in raising premium Burley tobacco has brought a great many fine handlers and raisers of this specialty into the county within the last twenty years. It was one of the first counties to adopt generally the share system. Under this liberal system great prosperity has come to the laboring classes. Many of the laborers have bought good farms and live in comfort. In one neighborhood many thousands of dollars can be borrowed from the laboring classes alone. It may be of interest to the public to know just what the share system in Shelby county is. Usually the farmer furnishes to the tenant a good house to live in, with garden, grazing for horse, cows and hogs for their own use. The tenant raises usually about ten acres of tobacco and some corn, half of each crop belonging to the farmer. There is no charge for the garden and the grazing privileges. Where the land is good and the tenant is intelligent and industrious he soon gets to be in comfortable circumstances. It is usual in the best parts of the county to raise 1,400 pounds of

tobacco per acre. This often sells for ten cents per pound, so that ten acres of land will yield from \$1,200 to \$1,400. The tenant getting one-half of this in addition to his opportunities to make a living on garden, corn, land, etc., often has an income which a professional man would be very proud of. Many of our laborers have developed into substantial and influential business men; their sons sometimes enter the professions, and many of their children take high positions in our schools. We are justly proud of this development.

Our road system is a peculiar mixture of the good and bad. We have over three hundred and twenty-five miles of macadamized roads in the county. Most of our roads were built by the farmers, with liberal aid from the county. About the year 1870, an act was passed in the Legislature under which Shelby county voted a turnpike tax of eight cents on the hundred dollars. Bonds of fifty thousand were issued and the proceeds of sale of these bonds were donated to building macadamized roads. When this fund was used up, the building was continued with aid from the county; all the roads are worked by taxation. The county pays for all the hauling for bridges and culvert. The money that goes out of the county treasury for road orders is very considerable; the roads are well worked. Like many other counties in the State, we need a better road system.

The dairy interest is a very important one in Shelby county. In the western part of the county along the railroad line there are a large number of successful dairies. Shelby county is noted for the interest manifested by her people in higher education. A large number of the youth attend the colleges and universities. There is a very fine college for girls located in Shelbyville, which is extensively patronized by the people of the county. The first agricultural society was formed in the State under the State law and, in connection with the Department of Agriculture, Labor and Statistics, was formed in Shelby county.

The county is one where the transportation facilities are first class. The Louisville & Nashville, Southern, Chesapeake & Ohio all run trains through the county. There is also a branch railroad from Shelbyville to Bloomfield in Nelson county.

Shelbyville, the county seat, is a thriving city of nearly 5,000 inhabitants. It is supplied with all the modern conveniences in the way of lighting plants, waterworks, telephone exchanges, etc. Its

school facilities, as well as the school facilities of the entire county, are first class. Shelbyville is situated in one of the best agricultural sections of the State, and is enjoying a steady growth in population and business prosperity.

Simpsonville, on the Louisville & Nashville, is a prosperous little city of some 600 inhabitants. Here the lines of trade are represented and the growth in population and development is steady. Christiansburg, Bagdad, Waddy and Finchville are prosperous towns, and there are besides these a number of postoffices where the local trade is considerable.

Shelby county is situated in the Eighth Congressional, Third Appellate, Twelfth Judicial, Fourteenth Senatorial, and Fifty-fifth Legislative Districts.

SIMPSON COUNTY.

Simpson county was formed in 1819, out of the counties of Allen on the east, Logan on the west, Warren on the north, its southern boundary the Tennessee line. In 1817, a strip of three miles was added to it, taken from Logan county.

Its topography is generally level or slightly undulating and drained by the tributaries of Big Barren river. The soil is alluvial, based on blue limestone with red clay foundation, and yielding splendid crops in favorable seasons.

It contains within its area 143,000 acres and a population now of about 12,000 inhabitants. It is estimated that one-fifth of the area of this county is swamp land, and white or pipe clay predominating. This land is, indeed, valuable for the production of grass; by the use of fertilizing elements, it yields an abundant crop of wheat. Corn, oats, wheat, hay and tobacco are the staples, much more than necessary for home consumption. Stock peas, a recent introduction, grow well and are destined to supersede clover, an uncertain crop in recent years. By the cultivation of peas, it is believed that it will do away with the use of any further fertilization of the soil.

The principal stream of water is Drake's creek, the western fork of Barren river. This stream runs nearly through the center of the county, north and south, parallel with the Louisville & Nashville railroad and turnpike. It is available for milling purposes, generally, the year round.

A variety of timber is found here. The writer has a wooden library of sixty-five different specimens of wood. Oak and hickory are the principal growth, the oak for building, fire and fencing purposes. The hickory is exported in great quantities for axe handles, also a large amount of walnut timber is sent abroad.

Limestone rock, found on an average from ten to twenty-five feet under the surface of the ground, crops out in many places and is used for building and other purposes. Our swamps could afford any amount of workable clay. Years ago this clay was worked at two or three points in the manufacture of earthenware. Gas and oil are found in many places, but not so far in quantities sufficient to attract the attention of capitalists. Many wells and few springs of mineral water of sulphur and iron (chalybeate water) are distributed over the county, notably a well in the county seat, Franklin. This water is used largely for medicinal purposes and for years has attracted many visitors as a health resort.

The industrial developments of Simpson are creditable. At Franklin a woolen mill is located which supplies many of the Eastern and Western cities with its production, blankets and linsey. Franklin has two flour mills, also two others on the waters of Drake's creek and one at Priceburg, on the waters of Red river.

Tobacco is largely grown in this county, also in the adjoining counties of Sumner and Robertson in Tennessee. We have two planing mills in the town, which are well patronized by this and the neighboring counties.

There is only one railroad in Simpson county—the Louisville & Nashville railroad. Only one turnpike, known as the L. & N. pike. Both of these run through the center of the county sixteen miles as intimated, parallel with Drake's creek. Simpson county has been very derelict in the building and improving of roads within its borders. The question of such improvements are attracting the attention of its officials. Some needed work is now being done in the way of turnpiking.

Negroes and native whites do the work. Public schools are maintained by the State in all the school districts, mostly for six months in the year. There is in Franklin a college for young ladies known as the Franklin Female College. The building cost \$15,000. She is now building a \$10,000 edifice for a male college. Besides the above, there are many private schools and these well patronized.

Franklin, the county seat, is six miles north of the Tennessee

line on the Louisville & Nashville railroad. For its sanitary and hygienic facilities, its location is unexcelled by any, and no town in the State surpasses it for beauty and its splendid arrangement. The population of Franklin is three thousand. The public square is large. On all sides are business houses, doing a thriving business. In the center of the square is a beautiful park adorned with blue-grass and well-kept shade trees. In the center of this park is built the court house, at a cost of \$30,000. On each corner of said park are bored four public wells from seventy-five to one hundred and ten feet deep through limestone rock. One of these wells runs day and night by means of a pump; the motive power is obtained by our excellent system of waterworks, located one and a half miles from the city. The water from the power-house on the bank of the creek is thrown through an eight-inch pipe to a tank in the corporate limits, elevated one hundred and twenty feet high, its capacity twenty thousand gallons.

Franklin has an electric plant, which furnishes illumination for the streets, public buildings and private residences. It is connected by telegraph and telephone with the wide world. Her citizens are justly proud of her improvements and environments.

There are many thriving villages in the county, to-wit: Gold City, Hickory Flat, Neosho, Priceburg, Hillsdale, Salmons, Rapids, Temperance and Stowers. The price of land in the county ranges from ten to fifty dollars.

Simpson county is in the Third Congressional, Second Appellate, Seventh Judicial, Ninth Senatorial and Twenty-first Legislative Districts.

SPENCER COUNTY.

(Revised 1907 by Judge G. B. Shindler.)

Spencer county was created in 1824 out of parts taken from Bullitt, Nelson and Shelby counties, being the seventy-seventh county, and was so called in honor of Captain Spear Spencer, the gallant young Kentucky hero, who fell at the battle of Tippecanoe, November 7, 1811. The county affords variety in soil and location. The eastern end of the county is rolling or quite hilly, but the county becomes more level as one travels westward and northward. These hill lands

are very fine for tobacco, and have placed Spencer county in the very forefront in the tobacco markets. For fruit they are also well adapted, the apple tree and grape vine being especially vigorous, productive and free from disease in this section. Spencer boasts of one bearing vineyard of thirty-four acres. Fine crops of grain, vegetables, etc., grow here as well, and the famous bluegrass revels in our strong limestone soil. Clover, timothy and orchard grass flourish, and are much used, particularly by the farmers. Tobacco is less grown in the more level portions of the county, the attention of the farmers being especially devoted to stock raising, wheat, corn and hay. Taylorsville is recognized as one of the best stock markets in the State, where good sheep and hogs, fine shorthorn cattle and well-bred combined horses and heavy mules can be found at any time. Several of our farmers habitually feed from fifty to two hundred beef cattle each. The valleys along the abundant water courses are very productive, yielding from fifty to one hundred bushels of corn per acre and other crops in proportion. About thirty per cent. of the timber remains, but is being cut away and no provision made for future supply. It consists chiefly of walnut, poplar, oak and beech, with a good supply of maple, ash, elm, hickory, cherry, etc.

The school facilities and interest in educational matters are well up to the State standard, the whole county working under the public school system for five months, and most of the schools being continued for another five months by private subscription. A new, commodious Graded Common School building has been erected at Taylorsville and is now ready for use. "Spencer Institute" is a fine educational institution located at Taylorsville, with fine buildings and grounds and a large corps of able teachers, instructing pupils in all preparatory branches. The county is well supplied with flouring mills and saw mills, but there are no other manufacturing industries despite the fact that its streams offer exceptionally fine water power. There is not a distillery in the county, and no saloons. A tobacco factory is located at Taylorsville.

Spencer exports are principally horses, mules cattle, sheep, hogs, poultry, eggs, tobacco, wheat, corn and fruit. The C. & O. railroad (northern division) runs across the center of the county a distance of twelve miles, and affords good shipping facilities and passenger service. The county has seventy miles of turnpike within its borders, but did not contribute to their construction and does not own any stock in them.

County roads are plentiful and kept in fairly good condition without taxation for that purpose. Salt river (put down on the map as the north fork of that river) runs through the central portion of the county from east to west. Brashear's, Simpson, Big and Little Beech, and Plum creeks are large streams, affording ample water supply and the finest water power available for running machinery, etc.

Farm methods have improved greatly in the last few years, and the people are building up their lands and becoming more progressive and prosperous continually. Improved machinery is used everywhere. Home-made fertilizers and clover, with strict rotation of crops, are preserving and adding to the fertility of the soil.

Taylorville is the county seat, and has made notable progress in the last two years.

Spencer county is located in the Eighth Congressional District, Third Appellate, Twelfth Judicial, Fourteenth Senatorial and Forty-first Legislative Districts.

TAYLOR COUNTY.

(Revised 1907 by Garnett Graves.)

In the year 1848, Taylor county was formed out of the northern portion of Green county, and Campbellsville was made its county seat. It is located almost in the center of the State, and bounded on the north by Marion county, on the west by Larue county, on the south by Green county, and on the east by Casey and Adair counties. The central portion which is in and around the county seat, is rolling, while the extreme eastern and western portions are hilly. The county has an abundance of water but no navigable streams.

Green river and Robinson creek run through the eastern part, and Pitman creek and Brush creek run through the western part, and all of them in a southerly direction. The soil along these streams is very fertile and is especially adapted to raising corn, while the central part of the county is not so strong but especially adapted to the raising of wheat. Very little tobacco, compared with other counties, is grown in this county, because the land is much better adapted to wheat and corn.

There is no soil in the State more suitable for raising watermelons than on the waters of Robinson creek, where hundreds of loads of

these melons (some of them weighing as much as fifty pounds) are produced. In the extreme western portion the soil is suited to the raising of sorghum. The condition of the farming lands has been much improved in the last few years and is selling at much better prices, some farm lands selling as high as \$50 per acre, but the average price is about \$30.

There is some timber in Taylor county and it is being hauled to the market in the form of staves, heading and lumber. The average price of the timber lands is about \$20.

One railroad runs through the county and that is the C. & O. division of the L. & N., which road furnishes all the transportation facilities.

The public road system of the county is on a good basis, and though it has only about 75 miles of macadamized, every year more is added. All the macadam roads are toll roads. The labor of the county is mostly white, but there are some negroes. The average price of farm labor is \$13 per month with board, and \$17 per month without board. Labor is scarce and the price of farm hands is increasing every year. The county is in a most excellent financial condition out of debt, and a tax rate of only 40 cents for county purposes.

No county in the State has better educational facilities. There are fifty-two common (white) schools, located in as many different localities. Each school district has a good school building, and the teachers will compare favorably with any county in the State. At Campbellsville we have two colleges, one was established several years ago by the Presbyterians, and has done good and efficient work. The other has recently been established and is known as the "Russell Creek Baptist Academy," and has, in addition to its three story brick school building with twenty rooms, a dormitory for girls containing twenty-five rooms, and one of the same size for boys, being erected.

Taylor county is without saloons, and consequently the moral, religious, and social conditions are of the highest order.

There are churches located in every part of the county. The Baptist is the leading denomination, with the Methodist, Presbyterian, Cumberland Presbyterian, Christian and Catholic next in order.

Taylor county has both the Home and Cumberland telephone systems, and the two together reach all points in the county.

Taylor county now has a canning factory, and there are several

hundred acres of tomatoes grown in the county. A dairy is another new enterprise that commenced business this year, and over 100 Jersey cows have been imported to supply this business.

An overall factory, with a capital stock of \$20,000 is still another new enterprise which will employ over 100 people.

The county seat, Campbellsville, is the largest city in the county, being a city of the fifth class and situated in the central portion of the county. It has five white churches: Baptist, Methodist, Presbyterian, Christian and Catholic. Three negro churches: Baptist, Methodist and Presbyterian; five schools, one newspaper, a bakery, two livery stables, two planing mills, two flour mills; a bottling plant, a pressed brick plant, two hotels, three banks, seven grocery stores one whole-sale grocery, two undertakers, three drug stores, seven general stores, four hardware stores, a large electric light and ice plant, and four lumber dealers. Possibly no fifth-class city in the State can boast of as many miles of pavement, most all concrete. Among the most important villages in the county are Elk Horn, Mannsville, Merrimac, Spurlington, Saloma, Finley, Willowtown, Enoch, Mac and Pitman.

Taylor county is situated in the Fourth Congressional, Third Appellate, Eighth Judicial, Fourteenth Senatorial and Thirty-eighth Legislative Districts.

TODD COUNTY.

(Revised 1907 by S. Y. Trimble.)

Todd county is in Southern Kentucky, bordering the State of Tennessee. It was formed in the year 1819, being taken from the counties of Logan and Christian, and was named in honor of Col. John Todd, who fell in the battle of the Lower Blue Licks, in August, 1782.

Todd is a long, narrow county, about thirty miles in length from north to south, while its width from east to west, is on an average, only about fourteen miles. It contains about 420 square miles.

It is bounded on the north by Muhlenberg, on the east by Logan, on the south by Robertson and Montgomery counties in the state of Tennessee and on the west by Christian county. The greater part of the surface is level, the northern part alone being broken and hilly

though containing many rich bottom farms. The county is well watered and drained. Clifty creek and Pond river drain the northern sections and the tributaries of Red river and the lower Cumberland drain the southern part of the county.

South Todd has a limestone soil and which is unusually strong and productive and there may be found some as fine farming lands as are in the State; the northern part of the county is freestone, but is quite productive and good crops are grown and the people for the most part are prosperous.

The once magnificent forests in Todd are fast disappearing—in fact, are now almost gone. Oak has been found in larger tracts than other timber, but there has been also an abundant supply of poplar, beech and walnut; there is no pine. During the last five years the timber industry has grown immensely and in this way much foreign capital has come to Todd. During the summer of 1905, frequently from fifty to one hundred wagon loads of lumber have been daily delivered at Elkton alone. Saw mills and stave mills dot almost every hillside where timber can be found; the lumber goes to points north of the Ohio and the staves to Louisville.

There are no navigable streams in the county, but much good waterpower. The waters of Elk Fork, of Red river and West Fork, of Pond river were formerly used for power to propel the machinery of mills along their banks, but steam has come to be the sole moving power, and these mills which at one time graced the banks of these streams as busy places of industry, have long since fallen into "innocuous desuetude."

The roads have greatly been improved in recent years; there are now about forty miles of pike and Todd county never knew a toll gate. The old system of road working has almost gone and now each magisterial district has its road supervisor and the work is paid for by taxation and to this charge is due the marked difference in the condition of the dirt roads.

Three lines of railroad traverse the county; two being owned and all operated by the Louisville & Nashville Railroad Company. The Elkton & Guthrie R. R. was built by subscription of the enterprising citizens of the two towns and has greatly contributed to the improvement of both towns and to the development of the county.

Until recently good farm lands have been worth on an average of about \$25.00 per acre; they are now bringing better prices and

many farms command from \$50 to \$75 per acre, and good lands are in great demand. The staples are corn, wheat, tobacco and hay, a surplus of all being raised. The county produces unusually fine tobacco, and that is really the leading staple, although South Todd exports annually large quantities of wheat and more attention is now given to the breeding and raising of good stock than formerly; and many first-class horses raised in this county bring fancy prices in the Eastern cities. Todd is in the center of the "Black Patch," and at Guthrie is located the headquarters of the "Farmers' Dark Tobacco District Association," a corporation recently organized for the protection of the growers of dark tobacco.

The labor on the farm is done by native white and colored hands whose wages range from \$10 to \$15 per month; however, the greater part of the tobacco crop is grown by croppers on the share plan.

Neighboring coal mines have taken from the county so many farm hands during recent years, that labor is come to be a serious problem to the planters.

The common school system of the county is well managed and the schools well attended and the teachers are of the most proficient. At Elkton, Trenton and Guthrie are first class graded schools maintained by district taxation and at Elkton is the Vanderbilt Training School and adjacent to Vanderbilt University, which was donated by the citizens of Elkton to the Methodist Conference of Kentucky. These schools as much as any other thing have contributed to the material advancement of the county, and its citizenship.

Elkton, the county seat, is at the terminus of the Elkton & Guthries railroad and is the shipping point for much the greater part of the county. It is near the center of the county and a thriving business town, has two banks, many substantial business houses, and a failure in business never occurs.

There are other flourishing towns, viz.: Guthrie, Trenton, Allensville, Fairview and Kirkmansville.

Todd county is in the Third Congressional, Second Appellate. Seventh Judicial, Ninth Senatorial and Nineteenth Legislative Districts.

TRIGG COUNTY.

(Revised 1907 by Robert Crenshaw.)

Trigg county formed in 1820, is located in the south-western part of the State, and is bounded as follows: By Lyon and Caldwell counties on the north, by Christian county on the east, by Stewart county, Tennessee on the south, and by Calloway and Marshall counties on the west. It is watered by two navigable streams, the Tennessee river, which forms the western boundary, and the Cumberland, which flows from north to south almost through the center of the county. Iron ore and timber are found in abundance in the western part of the county. Prior to the war Trigg county was one of the largest if not the largest iron manufacturing counties in the State. There were then operated several furnaces engaged in making charcoal iron. But one of these furnaces is now in operation. Much of the lands surrounding these furnaces were coaled off some fifty to sixty years ago, and are now covered with fine second growth timber, large enough now to make railroad cross-ties.

The eastern part of the county is limestone foundation and is very productive for wheat, corn, tobacco, clover and alfalfa. Our farmers have never learned the art of intensive farming, and when the farmers institute was held here last year, many availed themselves of the beneficial and instructive lessons of the State representatives.

Up to two years ago the price of tobacco had become so low, through the manipulations of the tobacco trust, that many farmers had become much discouraged, but through the Dark Tobacco Association the prices on all classes have been advanced nearly one hundred per cent, and except for the unsettled condition of labor farmers would be in a prosperous condition. Many of the larger farms are worked with hired labor, or by share croppers.

In addition to the iron ore that is found abundantly in the western portion of the county, recently lead, zinc, and fluorspar have been found in the eastern part of the county. A company has been formed at Gracey and is now engaged in sinking a shaft near the county line between Trigg and Christian counties. They have at this writing struck a vein of lead, zinc, and fluorspar and have had the product assayed, and it has been found unusually rich.

There is at present but two railroads in the county, the Illinois Central, which runs through the northeastern part of the county, and the Cadiz Railroad, which runs from Cadiz to Gracey, intersecting there the Illinois Central and a branch of the L. & N., extending from Gracey to Clarksville. The Cairo and Cumberland Gap road has a line surveyed through this county running from Fort Jefferson on the Mississippi river, near Cairo, Ill., through Ballard, Carlisle, Graves, Marshall, Trigg, Christian, and extending on through the eastern part of Kentucky with its rich coal fields. This great trunk line, if ever built, will connect the mineral wealth of Trigg with the fuel of the rich coal regions of the eastern part of Kentucky, and those who have the forethought to put their capital in these natural resources, thus harnessed together by Carnegie's steel rails, will eventually roll in wealth.

Cadiz is the county seat of Trigg, and is located on Little river about nine miles from the Cumberland. The county is abundantly supplied with water. Its educational advantages are good, it having a graded school; from 1,000 to 1,500 hogsheads of tobacco are prized and shipped from here annually, yet the town of Cadiz is lacking in enterprising business men who are willing to risk their money in manufacturing enterprises. This would be a splendid place for the location of a woolen mill, especially if the railroad that has been surveyed through the county should be built. There is now a wagon factory here that does business on a small scale, which could sell more than four times its output if they would make them. Although in recent years much of the best timber here has been shipped there is plenty there left for a hub or spoke factory. A factory for the manufacture of woolen goods could be operated here successfully and profitably. There is but one turnpike in the county, yet during the last few years road graders have been purchased by the fiscal court, and our public roads have been put in good condition. There are four rural routes now in operation two from Gracey, extending through the eastern part of the county, one from Tobaccoport, Tennessee, and one from Cadiz.

There is much complaint of the character of our labor among farmers, and a demand for better labor. Land is cheap here, ranging from \$10 to \$50 per acre according to location and improvement.

Trigg county is situated in the first Congressional District, First Appellate District, Third Judicial District, and in the Third Senatorial District. It is well interspersed with free schools, lasting from

five to nine months in the year. The people are about the average in intelligence and are law-abiding. The county voted dry in the local option election held here September, 1906.

TRIMBLE COUNTY.

(Revised 1903 by D. H. Peak.)

Trimble county, the eighty-sixth in order of formation, was established in 1837, from parts of the counties of Gallatin, Henry and Oldham, and was named in honor of Judge Robert Trimble, who at one time was on the Supreme Bench of the United States. When first formed, the extreme northeastern corner extended to the big Kentucky river, but quite a large portion of this section was cut off in the following year (1838) in the formation of Carroll county. The Ohio river forms the northern and western boundaries of the county, a distance of about twenty miles, and is the only navigable stream within or on the border of the county. Oldham county forms the southern boundary, while Henry lies on the southeast, and Carroll on the northeast. The Little Kentucky river, Corn creek, Barebone creek, Middle creek, Patton's creek and Spring creek, are the chief water courses. The Little Kentucky river flows through the eastern part of the county for quite a distance and possess available water power to propel machinery. All the others flow into the Ohio on the western boundary, and their water power possibly might be utilized; but none of the streams can be made navigable by a system of locks and dams. The table land is four to five hundred feet above the level of the Ohio, and the surface of the county is very hilly. The rocks of the surface belong to the last part of the lower silurian group and the later groups, that of the creek and brook beds being the blue limestone of the Cincinnati group, filled with fossils characteristic of that period. Above that is found a light colored limestone, possibly the Niagara, and still higher and on the surface of the highlands is a layer of sandstone or free-stone. All of these are excellent stone for building purposes, and easily quarried. A kind of marble is found near the Ohio in the Corn creek neighborhood. It is known as chronchitic marble, and is susceptible of a high polish. A corresponding vein on the hills opposite, in Indiana, has been worked quite advantageously. A marble of reddish brown color is found further inland, but doubtless it is the continuation of the vein above spoken of. Crystalline quartz and calcite abound in the quartz rock and limestone respectively, and concretions or deposits of iron sulphide are found in small quantities. Jesse

Wentworth recently found on his farm, near Mt. Pleasant, an excellent specimen of lead ore. However, this may have been imported into the county and lost on the farm named. Oil and gas have been found in small quantities. Some interest has been aroused in these discoveries, and steps are being taken to make a more thorough examination as to the extent and value of the deposits. Many leases have been taken in various parts of the county within the last few years with this idea in view. A few wells have been sunk, but no paying strike has been made. Small caves and sink holes are quite numerous in certain sections of the county. A cave near the Carroll county line has been explored, to some extent. The known portions of it consist of a room, perhaps twenty-five feet square, with concave roof resembling a terrapin's back, and having numerous chimney-like holes extending upward.

There are many never-failing springs in the county, some of which are remarkable for their medicinal properties. Among these may be mentioned the "Bedford Springs," once a famous health resort. The chief ingredient of the water of this spring is epsom salts, although analysis has revealed compounds of lime, soda, iron and sulphur. The water is pleasant to the taste and is especially good for the relief of stomach troubles. The spring is located on the farm of the heirs of the late Wm. Parker, about one mile south of Bedford. This was open to the public in the year 1902, Dr. I. K. Fisher having charge of it. It seems that a great opportunity is being neglected in allowing this place to lie idle. Several other springs of about the same quality of water have been discovered in the same locality, and at one place on the Parker farm the evaporation of water from a seepy place leaves a deposit of epsomite.

The average price of farm land per acre is about \$12, the price ranging from \$5 to \$50. Much worn out unimproved land is worth very little, but there is a great deal of ridge and bottom land that is much improved and valuable. It may be said in this connection that the farmers are each year adopting the many means they have at hand to enrich the soil and increase its fertility. The land is either freestone or limestone land, the limestone portion being more productive than the freestone, the freestone, however, being the best adapted to fruit growing. General farm products are raised, but the chief exports are tobacco, wheat and corn, tobacco being the greatest source of income. Red clover and timothy in the meadows, white clover and bluegrass in the pasture lands are the principal

grasses grown, and those best adapted to the soil. Stock raising is engaged in to a considerable extent and is a source of no little income to the county.

Fruit growing is the latest developed and probably the most extensive industry in the county. Fruits of all kinds, both large and small, thrive so well and are so abundant in Trimble county that it has acquired the reputation of being one of the most foremost fruit growing sections in the country. It has long been known as the "blackberry county," having received this name because great abundance of this delightful and useful fruit grows wild on the uncultivated lands. In years past, the wild blackberry has been a source of much income to the county, but owing to clearing and increased cultivation it is each year becoming more scarce. The cultivation of dewberries has been quite extensive, especially in the northwestern portion of the county. Apples, pears and grapes are very successfully raised, but for quantity and quality, of the larger fruits especially, Trimble's greatest success lies in the production of peaches. This industry has grown rapidly and hundreds of acres have been set in peach trees; in fact, one might call the country northwest of Bedford one vast peach orchard. The total crop of an average year is approximately half million bushels. The trees are thrifty, the fruit large, well flavored and highly colored.

There are no vegetable or fruit canneries in the county. The nearest are located at Madison, Indiana, and Carrollton, Ky., and they receive much fruit from Trimble, as well as tomatoes, raised especially for them. The soil is well adapted to the production of tomatoes and vegetables in general and considering the wonderful success of fruit growing, canneries would meet with unbounded success.

Probably ten per cent. of the original timber growth remains, but this is being cut rapidly. The principal species of timber available for lumber purposes are beech, oak, poplar, walnut, ash, lynn, sugar-maple and elm. The saw mills that convert this timber into lumber, etc., a flouing mill located at Milton, a whisky distillery and a brandy distillery constitute the county's manufactories.

The labor is chiefly white, our colored population not being large. The largest portion of labor employed is farm labor, with the exception of that employed in preparing our fruits for market, which is really a species of farm labor. The amount paid hands in peach orchards for picking, packing, etc., ranges from fifty cents to one dollar, accord-

ing to the character of the work performed. The average price paid for farm hands is about \$13 per month. The price varies from fifty to seventy-five cents per day. For tobacco setting and harvesting, it sometimes reaches \$1.50 per day. Hands hire by the month at \$8 and \$10 with board, at \$15 to \$20 without board.

The "Short Line," a branch of the L. & N. railroad, runs for several miles near the extreme eastern boundary, but no railroad has ever been constructed within the borders of the county. Several have been proposed, and in some instances surveys were made. At one time work was begun in a neighboring county, but the work was abandoned, and has never been taken up again. The railroad question has been much discussed of late, and we have hopes that in the near future a steam railroad or an electric line will pass through our county. The Ohio Valley Traction Company has recently surveyed a line through Trimble, the terminus being at Cincinnati and Louisville. The survey was made along the Ohio, but if the road is built it is probable that a new survey will be made through the central portion of the county. This would be of untold advantage to the county. A telephone line, the property of the Home Company, connects Bedford and Milton, extending to Carrollton, Ky., and Madison, Ind. The Cumberland Telephone and Telegraph Company put in an exchange at Bedford in 1902, and extended its line to Milton. All of the principal points in the county are connected with Bedford by lines to this exchange. It is probable that an exchange will be put in at Milton in a short time. There are now about eighty miles of turn-pike in the county, on thirty-two miles of which toll is collected. Most of the road on which toll is collected is good, some of it is excellent, while that on which no toll is collected, there being no taxation for the maintenance of it, is only fair. Other county roads are indifferent, though reasonably good for the greater portion of the year. We have no road commissioners, the old system of "warning out hands" being still in vogue. However, a road grader has been purchased, and from year to year decided improvements are being made.

There are no educational institutions in the county other than the public schools and usually a private school, for the higher branches, at Bedford. A graded school was established at Bedford in September, 1903. These schools are in good condition, a marked progress having been made in the educational line during the last ten years. A number of the districts supplement the public fund by subscription.

The bonded indebtedness of the county is about \$28,000, and the rate of taxation for county purposes, fifty cents on the one hundred dollars.

According to the census of 1900, the population was 7,232, a slight increase since the previous census. In Hunter's Bottom, embracing parts of Trimble and Carroll counties, is located what may be termed a foreign colony. The people are Germans and are thrifty, hard working people, making good citizens.

Bedford, situated near the center of the county, is the county seat, and, owing to its central location, is quite a business place for its size. According to the last census it had 307 inhabitants. Milton, situated on the Ohio, opposite Madison, Ind., has about the same number of inhabitants as Bedford.

The mail facilities at Bedford are probably as good as those of any inland town in the State. Two rural routes extend from Campbellsburg into the county; one from Pendleton, and two from Milton.

Trimble county is situated in the Sixth Congressional, Fifth Appellate, Twelfth Judicial, Twenty-first Senatorial, and Fifty-second Legislative Districts.

UNION COUNTY.

(Revised 1907 by J. M. Buckman.)

Union county was formed out of the southern portion of Henderson County, by an act of the Kentucky Legislature, approved January 15, 1811, and was organized on the first day of May following.

The county is situated on the Ohio river, 240 miles by river below Louisville, and 168 miles by rail to Morganfield, the County Seat.

The county borders on the river from the head of Slim Island to the mouth of Tradewater River, forty-three miles, and is bounded on the east by Henderson, on the west by the Ohio and Crittenden counties, on the north by the Ohio river, and on the south by that portion of Webster county stricken off from Union county in the year 1860. The county contains 361 square miles. The lowest point is about 300 feet above the sea level. The surface as a rule is comparatively level and undulating except one range of hills which

runs through the central portion from east to west. Much of the soil is a sandy loam bedded on a red clay subsoil with but little stone or gravel. Watered on the north by Anderson, Casey, Mason, and Lost and Highland creeks, and on the south by Ramsay, Dyson, Eagle, Cypress and Hynes creeks, none of which are navigable.

Our products are corn, wheat, rye, oats, tobacco and stock-peas. The principal hay crop is timothy and clover. We raise horses, mules, cattle, hogs with but few sheep and goats. Our timber supply is nearly exhausted.

Many persons are planting black locusts to supply posts in the future.

Our water supply for domestic purposes is from wells and cisterns, and from ponds and the creeks for stock. The principal part of the fruit crop is for home consumption; in fact, we buy much more than we sell.

We have a great deal of soil suitable for grape culture but little of which has been utilized for that purpose. Our coal supply is abundant with mines in operation and others preparing to open up.

We have two railroads in operation, the I. C. R. R. which runs through the county for fifty-two miles, including the coal branches, about twelve miles of the Morganfield & Atlanta R. R. is in Union county and taps the L. & N. R. R. at Providence in Webster county twenty-six miles distant from Morganfield. We have no rock or gravel pikes.

We have about five hundred miles of good dirt road kept up by contract by the mile. We levy a tax of fifty cents on the \$100 for road, bridge and general purposes. Morganfield has been the county seat since the county was organized. It is near the center of the county on the I. C. R. R. and has about 2,500 inhabitants, three banks, three mills, eight churches, one graded school, two telephone companies, one ice plant, two newspapers, grain elevators, two coal mines, with dry goods, drug and grocery stores sufficient to supply all the demands of the city and country around.

Uniontown has seven churches, two banks, one wagon factory, two coal mines, one large distillery, one flour mill, with stores of all kinds necessary to supply her trade. Sturgis, the great coal center, is one of the most thriving towns in the county. The company that owns the mines has invested there above \$250,000.00 for the plant, the coal rights and the surface.

Sturgis has one National and one State bank, with many stores, a college, a graded school, machine shops, and all other conveniences of a thriving city.

Waverly, on the I. C. R. R., seven miles east of Morganfield, has one State bank with good solid merchants, with a coal mine in full operation, with twenty-six acres surface and fifteen or sixteen hundred acres of coal rights and another shaft being opened up at Bakersville, two and one-half miles from Waverly in which the company has invested between \$80,000 and \$90,000. Sullivan, a station on the I. C. R. R. four miles south of Sturgis and in the extreme southern portion of the county, has a post-office, public common school, two churches, a good hotel, two coal mines, dry goods and grocery stores, shops and other conveniences to supply the demands of the community.

The other towns of the county are Caseyville, Bordley, Hitesville, Henshaw, Herman, and Boxville. The county has in all forty-four churches, two female academies, one college, three graded schools, with sixty-three common schools for white and twelve for colored, two National and seven State banks. The labor on the farms is performed by native whites and blacks. Union county has about 25,000 inhabitants, white and black, which does not include transients about the mines and towns. We have seventeen free delivery routes in the county.

It is situated in the First Appellate, Second Congressional, Fifth Judicial, Fifth Senatorial and Fourteenth Legislative Districts.

Post-offices are as follows:—Bordley, Boxville, Caseyville, Dekoven, Flournoy, St. Vincents, Sturgis, Sullivan, Uniontown and Morganfield.

WARREN COUNTY.

(Revised 1907 by M. O. Hughes.)

Warren county has an area of 563 square miles, 360,000 acres; 3,000 farms, averaging 120 acres each, and one person to each fifteen acres; whereas, Pennsylvania has one to six acres, Massachusetts, one to three; Derbyshire, England, of the same size and soil, has ten times the population. It was formed from Logan county in

1796; Logan from Lincoln, and Lincoln from Kentucky county, Va., in 1780. It was the twenty-fourth county formed and was named after Gen. Joseph Warren, who fell at Bunker Hill. It lies in the southern part of the State, separated from Tennessee by the county of Simpson, and the thirty-seventh parallel of north latitude passes through its center, thus giving it a climate unsurpassed by any country in this latitude. The average temperature for the year is fifty-six degrees; the annual rainfall forty-seven inches.

The topography is gently undulating, the altitudes run from 469 feet, the level of the rails at Bowling Green, to more than 800 feet on top of Chester capped hills of North Warren.

It is accessible to streams, navigable the year round, by means of Green and Barren rivers, which communicate with the Ohio thence through the entire Mississippi Valley, and its 25,000 miles of navigable streams. In addition to these it is splendidly watered by Gasper river, Drake's creek, Trammel, Indian and Bay's Fork, Clear Fork, Black Lick, Bushy Fork and their numerous tributaries.

The soils are of many kinds, and vary from the most fertile alluvial to the leaner sandstone soils, including the calcareous or limestone which covers three-fourths of the county. The prices range from \$5 to \$150 per acre, the latter for the most productive limestone and alluvial soils. Corn, wheat, oats, rye, all the grasses, including alfalfa, tobacco, together with all the vegetables and fruits common to this latitude, are grown here in abundance.

All the hardwood and other timbers, amounting to 150 species, are found here, and marketed to all parts of the country. Prices of timber lands vary from \$75 to \$100 per acre.

The minerals are coal, bituminous, sandstone or Kentucky asphalt, iron ore and traces of lead. Kentucky rock asphalt is being largely developed for use on the streets of Bowling Green and other cities such as Buffalo, Memphis, Mobile, Topeka, etc. It can be mined, crushed and placed on barges in Green river for less than \$3.00 per ton and is destined to become the street paving and road making material of the Mississippi Valley. Vitrified brick and terra cotta clays are found in great quantities. There is a cream colored oolitic limestone, which covers an area of more than fifty square miles, from ten to twenty feet thick, within less than five miles of the railroad and on the navigable waters of the Barren river; this is shipped in large quantities to all parts of the Union, and is

known as Bowling Green Stone. Four large quarries are now being worked. This stone is underlaid by ten feet of stratified oolite, which splits as readily as a chestnut rail and can be put into buildings as cheap as brick. This has been used largely for curbing, and has stood the test of time for more than half a century.

There are many prehistoric mounds, and mineral springs of rare value for their many and varied medicinal qualities; among them may be mentioned Massey's, Stallard's and Stark's, together with Allen Springs and sulphur wells too numerous to mention.

There are seven hundred miles of public roads in the county, and two-thirds of this number have been graded. There are two hundred miles of macadamized roads running in every direction from the county seat. There are no toll gates, but the pikes are kept up by taxation, with \$25,000 in cash for road improvements per year. At least ten miles of macadamized roads are being added each year.

Labor ranges from 75 cents to \$1.00 a day for farm hands to \$5.00 for skilled artisans, depending on the skill required. The farm labor is wholly American.

The educational facilities are equal to those of any part of the country. The Bowling Green State Normal School has more than 2,000 students annually. Potter College, for girls, Ogden College, for boys, and Potter Bible College, for religious as well as secular training, and St. Columbia Academy for both sexes making Bowling Green second to no city of its class as an educational center. There are three graded public schools in the city, and comfortable school houses, supplied with modern appliances in every school district. The teaching and teachers are equal to any in the State.

Bowling Green, the county seat, has twelve thousand inhabitants, and is a thrifty, healthy, growing town. Already in the immediate vicinity of the city are to be seen acres of small fruits ready for the market and factory. Among the fruits, one peach orchard of twenty five acres has realized more than \$3,000 for the season of 1905, and between \$7,000 and \$8,000 worth of early apples were shipped the same season. Strawberries are indigenous, and second to none on earth in quality and quantity. The recent organization of a strawberry growers' association has been formed and one hundred acres of berries have been set out and arrangements made to ship them in car load lots to the various markets. Four hundred acres of tomatoes are now being marketed to the large canning factory recent-

ly installed, and which during its fourth season is canning blackberries, corn, peaches and tomatoes, with strawberries in the future.

Warren county is noted for its live stock industry, especially for high class saddle horses, which are superior to any in the world. For mules it is second market in the State. Quantities of cattle, sheep and hogs are annually shipped. It is especially noted as a feeder of export cattle.

There are several progressive villages in the county, such as Smith's Grove, Woodburn and Rich Pond.

Warren county is situated in the Third Congressional, Second Appellate, Eighth Judicial, Eleventh Senatorial and Twenty-third and Twenty-fourth Legislative Districts.

WASHINGTON COUNTY.

(Revised, 1907, by W. D. Claybrook.)

Washington county was the first of the nine counties organized when Kentucky was admitted into the Federal Union as a State, 1792. Up to that time the county of Kentucky had been subdivided into seven counties of Virginia. Washington county was the first piece of territory named for the illustrious George Washington. Its area is 300 square miles; population, 14,182. Geographically it is the central county of the State. In Mr. Procter's report of the geological survey of the State, he says: "The center of the State is within a few hundred yards of the Pleasant Grove Presbyterian church," which is five or six miles north of Springfield, the county seat of Washington county.

The circumjacent counties are: North, Anderson and Mercer counties; east, Mercer and Boyle counties; south, Marion; west, Nelson.

It covers a part of the Salt river plateau, and is drained by Chaplin river, the Little and Big Beech Forks, Glen's creek, Cartright's creek and Hardin's creek and their tributaries.

The surface of the county has a general dip from southeast to north and west, this determining the direction of its streams.

Geologically considered the county is almost entirely of the oldest limestone formation. The southern boundary of the limestone basin of Kentucky cuts off a small portion of the southwest part of the

county. In that section the Devonian rocks and fossils abound. Near Fredericktown there is exposed near the top of the hills, on both sides of the river, a stratum of about five feet in thickness, of what is commonly known as the honey-comb coral. There is an abundance of other corals and of ammonites, and within a few hundred yards of these, by rapid geological descent, we reach the Silurian limestone with the greatest abundance of its characteristic fossils.

With the above mentioned exception, nearly the whole of the county presents the upper, middle and lower Hudson groups of the Silurian period. These limestones are continually disintegrated by atmospheric action and leave in the soils a large per cent. of lime and phosphate. Thus beginning with the Devonian period on the south there is an actual and geological descent to the lower strata of the Silurian rocks, exposed in the bed of Chaplin river, at the north of the county. The water of the famous Tatham well comes out of the Azoic rocks and is almost absolutely free from any organic substances whatever. These waters are rapidly becoming celebrated for their curative effects.

The surface of the county is beautifully undulating, in localities really picturesque. In the native forests are embraced nearly all the species and varieties of the trees of Kentucky, poplars, oaks, ash, beech, wild cherry, walnuts, hickories, maples, mulberries and black locusts. There are more than half hundred indigenous species, some of them growing to a great altitude and size. In the process of clearing up the country, in building houses and barns, and in the construction of fences and bridges, there has been an inconsiderate waste of a good part of this wealth of timber. Large areas of the county were originally clothed with cane-brakes.

The rich alluvial surface soil, being continually supplied with lime by natural disintegration, has made Washington county very productive of all the ordinary crops and grasses. Indian corn, wheat, rye, barley, oats, timothy, bluegrass, clover, and orchard-grass are all produced in such abundance as to richly reward the labors of the husbandman. From the earliest settlement of the county tobacco was one of the staple crops, but for the knowledge of the fact that our soil is peculiarly adapted to the production of the white burley tobacco we are indebted to the reports of our State geologist, Procter. Hence within the last fifteen years there has been a wonderful increase in the acreage of this crop, and the necessary erection of hundreds of commodious tobacco barns.

628 *Seventeenth Biennial Report Bureau of Agriculture.*

The farmers of Washington have within the past year organized the Washington County Tobacco Warehouse Company, with a capital of \$30,000, and have erected on the railroad, near Springfield, two big warehouses, one with a capacity of 2,500 hogsheads, and in the other a dryer has been installed. The 1906 crop is now in hogsheads in said warehouses. The First National and Peoples Deposit banks have furnished to the farmers five cents on each pound of tobacco. It is estimated that the 1907 crop will be near 5,000,000 pounds. The farmers are well organized in each precinct. Our farmers use the most improved agricultural implements. Choice seeds for field and garden are eagerly sought for. Land has advanced in value 33 per cent.

Springfield has two banks and some as handsome and commodious stores as are found in the interior. Her merchants are eminently reliable and enterprising. The city now has waterworks and electric lights.

The county is dotted over with comfortable and some of them beautiful country homes, surrounded by orchards and gardens, yielding the finest quality of fruits, berries and all the garden vegetables peculiar to this climate. Rural free delivery reaches every neighborhood.

In the improved breeds of live stock, Washington county is well to the front. She has many of the most improved families and crosses of the trotting horse, some racers that stand at the top, and in the Shorthorn, Polled Angus and Jerseys she has some of the finest in the State. Sheep and hogs of the best breeds are extensively raised and marketed. Her chief exports are mules, horses, fat cattle, lambs, wheat, corn and tobacco.

The first settlement in Washington county was made by three Polish brothers, by the name of Sandusky (Sondusky), who built a block house on Pleasant Run. In an Indian assault on this primitive fort one of the brothers was killed. At the battle of Blue Licks another fell. About the same time General Matthew Walton secured patents for the lands about Springfield and northwestward towards Louisville to the amount of about 80,000 acres, and later laid out the town of Springfield, donated grounds for public buildings and a cemetery, built one of the first water mills in Kentucky and a commodious brick residence, now occupied by John Barbour. He represented the district of Kentucky in the Federal Congress, and was a member of several of the constitutional conventions which formulated a Constitution for the State of Kentucky.

The first settlers of the county were mostly from North Carolina and the valleys of Virginia, and a good percentage of them were from Maryland, descendants from the Lord Baltimore colonists, hence, Roman Catholics in religion. The churches, schools, monasteries and convents founded by these have their representatives now in St. Rose, St. Catherine, etc. The Methodists, Baptists, Presbyterians and Christians are well supplied with houses of worship and an active ministry all over the county. There are more than thirty Sunday-schools in the county.

The county is divided into sixty-nine school districts, fifty-seven white and twelve colored, each one of them having a comfortable school house. Beside the theological training school at St. Rose and the large boarding school at St. Catherine of Sienna, there are three high and normals schools.

Washington county has nearly three hundred miles of macadamized and graveled roads, all now free to the public travel. She has but eleven miles of railroad, the Bardstown and Springfield branch, terminating at Springfield, running two trains a day each way.

Her public buildings are good, and the county is free from debt with a surplus in the treasury.

Washington county has now a system of telephone lines running from Springfield to most of the voting precincts—a home enterprise.

In the last two years the general range of prices of land of both improved and unimproved have advanced 25 per cent. Farm labor with board is from \$10 to \$15 per month, without board from \$15 to \$20 per month. Labor by day, fifty cents and board; seventy-five cents to \$1 without board.

The road question is so big that it is hard to determine what is best. In all of the county we now use machinery; have a rock crusher and steam engine, and a county road supervisor who is paid a salary by the county. The turnpikes and dirt roads are both in good condition.

The finances of our county have been exceedingly well managed in the past ten years, and the county is out of debt. Our tax rate for State and county purposes all told is only \$1.15 on the \$100. Altogether the county affords inducements to immigrants hardly equaled by any county in the State.

Washington county is in the Fourth Congressional, Third Appellate, Eleventh Judicial, Fifteenth Senatorial and Forty-second Legislative Districts.

WAYNE COUNTY.

(Written, 1907, by Walter N. Flippin.)

Wayne county is situated a little east of the middle portion of the State and adjoining the Tennessee State line, bounded on the north and east by Pulaski and Whitley counties, and on the west and north-west by Clinton and Russell counties, and was formed in the year 1800. It is watered by the Cumberland, Big and Little South Fork rivers and tributaries, the Cumberland forming a large portion of the northern boundary. While it is classed as a mountain county it is really a combination of hill and valley country, a large portion of which is well adapted to agricultural pursuits. Beginning at the Pulaski county line, the traveler coming from the Queen and Crescent railroad station at Burnside sees a magnificent scope of ideal corn, wheat and blue grass land. That lying on the banks of the Cumberland river is famous for its fertility. To form an idea of the great variety and quantity of farm products raised in these valleys one has but to travel during the navigable seasons over the Cumberland and Nashville Steamship lines. These are inadequate to handle the vast quantities of corn, wheat, hogs, poultry and other commodities produced along its tributaries. A great number of gasoline boats partially do the work of the steamboats during the low water stages. Lock and Dam No. 21 is now being constructed by the government at a point thirty miles below Burnside. This will furnish a six-foot stage of water above the dam to Burnside.

The Monticello and Burnside turnpike runs from Burnside on the Q. & C. to Monticello, the county seat, a distance of twenty miles. On either side of this is a beautiful valley several miles in width, the land comparing favorably and resembling closely the famous blue grass lands of Kentucky. These farms are equipped with splendid, up-to-date dwellings and out-buildings; and the farmers progressive and have in use all modern agricultural implements. The same can be said of Elk Spring Valley, Meadow Creek and all the rest of the farming districts of the county.

The road system of the county is being rapidly put on a first-class basis, an annual tax of 25 cents on the \$100 having been levied for road purposes during the last two years. This has made a most noticeable improvement in the condition of the roads throughout the

county. There is a healthy public demand for improved conditions in this respect, and this policy will be continued. Good turnpikes are in process of construction on the main roads from the county seat. Running north is a twenty-mile pike to Burnside, running east a pike has been completed five miles through the Elk Spring Valley, a movement being on foot to continue this a distance of fifteen miles to the Kentucky & Tennessee railroad. Running south a pike is being built over one of the roughest roads in the county, a distance of five miles to Cooper. This will open up vast tracts of timber and coal lands in the southern part of the county, which have heretofore been almost inaccessible. Another company is being organized for the purpose of piking the road from Monticello to Parnell Post Office in the western part of the county. This will practically complete a system between the county seats of Wayne and Russell counties.

An idea of what is being done may be formed from the conservative estimate that over \$750,000,000 worth of staves have been shipped from the county during the last five years. Notwithstanding this large production, virgin forests of poplar and hickory, beech, cedar, ash and walnut yet remain in abundance.

The eastern and southern portions of the county are rich in thick beds of high-grade coking, domestic and steam coal, veins ranging from three and one-half to seven feet, leaving a fine ash when burnt. The Kentucky & Tennessee Railroad Co. is now constructing a road from Stearns in Whitley county into these coal fields, about eight miles being now in operation.

The Cumberland River & Nashville Railroad Co., composed of local capitalists, began last spring the building of a road from Tateville, nine miles south of the city of Somerset, on the Cincinnati Southern railroad, a distance of twenty miles to Monticello. Concrete bridges have been built and about half of the grading completed.

The wealth of the county has been augmented in the past twelve years by the development of its oil and gas fields. The first discovery of oil in the United States was made in this county in the year 1819. But little was done toward development until within the last twelve years. The production from January the 1st to September 30, 1907, was 367,000 barrels. This oil is purchased at the wells by the Cumberland Pipe Line Company, a branch of the Standard Oil Company, and transported through pipe lines to a refinery at Parkersburg, W. Va., a distance of over three hundred miles. Many gas wells have been opened which produce millions of feet of gas.

682 *Seventeenth Biennial Report Bureau of Agriculture.*

and are now plugged and ready to be opened when a market is found. There are at present 780 producing oil wells in the county, and a large number of drilling machines in operation.

Monticello, the county seat, has grown in population from 672 in 1900, to over 2,000 in 1907. A graded school building costing \$12,000 was erected in 1905, and a competent corps of teachers are now conducting an excellent school. A system of water works is now in course of construction and the city is lighted by an electric light system recently installed. A franchise for natural gas has been let to the Union Oil and Development Company, and a line will be laid to their wells, nine miles distant, to supply the city with gas. Two telephone systems connect with other points, The Gainsboro and The Southern. The entire county is connected with the city and outside world by a network of telephone lines.

Local option prevails in the county, and no intoxicating liquors are manufactured or sold within its boundaries.

Wayne county is in the Eleventh Congressional, Third Appellate, Twenty-eighth Judicial, Sixteenth Senatorial and Thirty-sixth Legislative Districts. It normally gives a Republican majority of about 200. All the present county officials are Republicans, having been elected in 1905 by majorities ranging from 275 to 389.

The present tax rate is fifteen cents for county purposes and twenty-five cents for roads,

WEBSTER COUNTY.

(Revised 1907 by J. F. Porter.)

Webster county is situated in the western part of the State, and was formed in 1860, of portions of Hopkins, Henderson and Union counties, and contains about 355 square miles.

The central portion of the county is moderately broken, but the greater part of the northern, southern and western is comparatively level.

Green river, which bounds the northern portion of the county for a distance of twelve miles, is a navigable stream, and considerable business is carried on by its means in the way of shipping produce, rafting logs, etc.

Tradewater river, which forms the southwestern boundary of the county for a distance of about fifteen miles, although not so large as Green river, is navigable for small steamers during a portion of the year.

The soil of Webster county is generally very fertile and adapted to corn, wheat tobacco, etc., especially the latter, great quantities of which are shipped to foreign markets. In fact, Webster county has been rated as one of the most important counties in Western Kentucky for the production of the dark tobacco for commerce. Recently tomatoes, peas, beans, and other vegetables are being raised by the farmers, and a canning factory at Sebree, is running night and day during the canning season.

There is still some excellent timber in this county, consisting of white oak, black oak, poplar, sweet gum, etc., a portion of which is being sawed and shipped for building and other purposes. The price of timber lands varies from \$5 to \$25 per acre.

While there are large quantities of building stone in the county, the principal mineral deposit is coal. Webster county is situated in the western coal field of Kentucky, as the outcrop of the coal field runs through the southwestern portion of the county, the coal is easily mined, is of excellent quality, and is as yet but partially developed, there being thousands of acres, underlaid, by the choicest coal, as yet untouched, offering an almost unparalleled opportunity for the investment of capital. This is the same coal that is being mined at Earlington, in Hopkins county, and which has made that place famous as a coal shipping point. New mines have recently been opened at Wheatcroft, Clay and other points in the county.

The chalybeate springs at Sebree, in the northeastern portion of the county, are the principal mineral springs of the county, and are famous as a health resort during the summer months. There are also many other sulphur and chalybeate springs in various parts of the county.

The Louisville & Nashville railroad traverses the eastern portion of the county for a distance of twelve or thirteen miles. There is also a branch of the same road running from Maidsonville. Hopkins county, to Providence this county, thence to Morganfield, and a branch of the Illinois Central runs from Blackford, on Tradewater, to Dixon, the county seat (a distance of eighteen miles), which, together with the two rivers above mentioned, will afford excellent facilities for transportation.

684 *Seventeenth Biennial Report Bureau of Agriculture.*

There are no macadamized roads in this county. The county roads are now worked under the contract system, and there is a prospect in the near future of having them in splendid condition.

In addition to the public common schools of the county, there are several graded schools at various points, viz.: One at Providence, Dixon, Sebree, Slaughtersville and Clay, all of which have a large attendance.

Dixon, the county seat, is pleasantly situated on a moderately elevated plateau, in the central portion of the county, and in addition to the public buildings has a large flouring mill, three dry goods stores, and three church buildings.

Providence, in the southern part of the county, is a thriving city, and has a large flouring mill, spoke factory, planing mill, pressed brick manufactory, saw mill, eight large tobacco stemmeries, six dry goods stores, etc. Large quantities of coal are mined and shipped from here by the Providence Coal Company. Providence is the most prosperous town in the county.

Sebree is also a thriving place, situated in the northeastern portion of the county on the L. & N. railroad.

Slaughtersville, on the L. & N. railroad is situated in the midst of a rich farming country and is prosperous.

Clay in the western portion of the county, is in the midst of a rich farming country, and coal mines are being opened up all around it, which insures it to become the leading town in the county.

There are other good towns in the county, as Lisman, Blackford, on Tradewater, Onton, near Green river; Pooltown near the Henderson county line, and Wheatcroft on the I. C., near Clay.

Webster county is practically out of debt, and has good roads, a good many iron bridges, and the tax rate for county purposes is 50 cents on each \$100 worth of taxable property and a poll tax of \$1.50.

Webster county is situated in the Second Congressional, First Appellate, Fifth Judicial, Fourth Senatorial and Twelfth Legislative Districts.

WHITLEY COUNTY.

(Revised 1907 by Isaac N. Steely.

The General Assembly, in an act approved February 16, 1818, created the county of Whitley, which was then a part of Knox. It formed the west end of that county and, on being created, included all of its present territory and a small portion of what was later erected into Laurel county.

Both Williamsburg, the county seat, and the county itself, were named in honor of Col. William Whitley, in the year 1818, when the county was created. It lies near the southeastern border of the State, being bounded on the south by Tennessee, on the east by Knox and Bell counties, on the north by Laurel, and on the west by Pulaski and Wayne counties. It has an area of nearly 600 square miles, a population of fully 30,000 and a vote of 6,000.

The surface is mountainous, the altitude being in the neighborhood of a thousand feet above sea level. The principal mountains are Jellico mountain, Heckler's Knob, Pine mountain and Patterson and Poplar creek mountains. The county is well watered, the principal streams being the Cumberland river, Clear Fork, Elk Fork, Big South Fork, Marsh, Jellico, Pleasant Run, Mud, Cain, Poplar and Patterson creeks, while Little Laurel river forms part of the northern dividing line from Laurel county. The Cumberland river flows westward through the center of the county, until within a few miles of the west county line, when it turns northward to the northern line and then again flows west, completing the northern boundary with Little Laurel river.

The Cumberland Falls, the "Niagara" of the south, has a fall of eighty feet, and a perpendicular fall of sixty-eight feet. With a dam built just above the falls, twenty thousand electrical horse-power can be maintained throughout the year, and this power offers one of the greatest enterprises east of the Mississippi river.

A company has been incorporated and has purchased the falls and surrounding property, having in view the harnessing of its tremendous power in sluices.

The geological formations are red and gray sandstone, shale, blue and gray, mixed with iron, alum, coal and slate, the dip of the strata being toward southeast at a small angle.

The mountains abound in coal of bituminous and cannel character, veins being found cropping out everywhere, in paying quantities. The average run of the veins is from four to five feet, ranging, of course, according to mineralogical conditions. Other ores, such as iron, have been found, but remain undeveloped, probably because of the absence of limestone in quantities sufficient to promote smelting on a big scale.

Whitley county undoubtedly abounds in oil, asphalt and other products and associates of coal. Traces of asphalt and coal tar have been found within a mile of Williamsburg. The conditions are precisely the same as those of Pulaski and Wayne counties.

The oil industry has been made profitable wherever it has been fairly tested, and the oil wells drilled on the Steely farm, one and one-half miles north of Williamsburg, have been pumped now for more than three years with very slight decrease in the quantity, and there are now four wells pumped daily. Oil is also found in the western part of the county, and two fine producing wells have very recently been drilled.

There are no turnpikes in the county, the public roads being the county or dirt roads, which are maintained by the county under the supervision of road overseers appointed by the county court and worked under the road laws of the State. Eight splendid iron bridges, costing in an aggregate of \$75,000, afford excellent means of traveling over the waterways, besides many wooden bridges. There are about 75 miles of completed railway in Whitley. The Louisville & Nashville runs from north to south through the entire length of the county, while the Cumberland Valley branch, leaving Corbin passes through the northeast corner, making a total of about thirty-six or thirty-seven miles. The C., N. O. & T. P. passes through the west end of the county for a distance of ten miles. The Jellico, Birdseye & Northern, a road of eight miles, and extending from Jellico, Ky., to the mines at Halsey serves as a common carrier. Two private lines are extending from the mines at Red Ash to Jellico, and the other, a line of two miles in length,

and connecting the mines at Kensee with the L. & N. road, serve also as common carriers on request.

There is being constructed two lines of railroad through the eastern part of this county now, which opens up one of the richest coal fields in Kentucky, they being the Pine Mountain and Cumberland lines, and the Kentucky & Tennessee has also been recently constructed and extended into a rich coal field in the western part of this county.

There are several mineral springs in the county, having a more or less medicinal virtue, while alum springs abound. The Mound Builders have left their traces in Whitley, the mounds having been found in the river bottoms and apparently having been built as a protection from high water during the seasons of overflow. They contain only relics of pottery and other implements of domestic use; no bones or other evidences of these mounds having been used for burial purposes are found.

Good mountain and timber lands can be had for from \$15 to \$50 an acre, while farm lands of good quality will bring prices ranging from \$5 to \$50 per acre.

The leading resources of the county are its mineral and its timbers. In addition to its vast paying coal fields, now worked by seventeen mines, immense quantities of soapstone and blue clay are found, which would afford an unlimited field for the extraction of aluminum. A number of persons are finding portable saw mills to be a good paying investment. There are plenty of openings for wood working industries of all kinds, the native timbers being pine, poplar, oak, ash and walnut. The annual output of lumber by the three big mills in Williamsburg and the half dozen portable and stationary mills in other parts of the county reaches millions of feet in poplar, pine and hard woods, through the best timber has been used up, except far out from the railroad lines.

The Williamsburg Institute has bought out the Highland Normal College and the trustees of the Institute hope and expect the Institute to be among the foremost colleges of the south within a very short time.

We have no bonded indebtedness, the county is entirely out of debt, and with its surplus, within the last two years, has built a new modern and up-to-date jail, being one of the most convenient jails in the State, and has built one steel bridge with about 150 foot span, has now eight steel bridges in the county, has con-

structed two miles of pike road leading out from the county seat on the road which was formerly one of the worst pieces of roads in the county, and has given contracts now for the construction of four more steel bridges and is having the floor in the Cumberland River bridge, which was wooden, supplanted with a permanent creodone creosote floor and steel joist, and it is the policy to have all wooden structures replaced with steel or stone, and this is being done on the regular taxes and surplus created by taxation at the regular legal rate.

The county is strongly "Local Option" having voted "Dry" at the last local option election by a vote of about 3,000 dry to about 500 wet.

Williamsburg, the county seat, has at least 2,500 population, has a steady, healthy growth, with convenient railroad facilities, has one of the best schools in the State, the Institute, and a new Baptist Church will soon be completed at a cost of more than twenty-five thousand dollars.

Corbin is probably the largest town in the county, claiming a somewhat transient population of about 3,500. It is a railroad town, the Knoxville & Cumberland Valley division of the Louisville & Nashville railroad ending here.

Whitley county is situated in the Eleventh Congressional, Third Appellate, Twenty-eight Judicial, Seventeenth Senatorial and Sixty-ninth Legislative Districts.

WOLFE COUNTY.

(Revised 1907 by Spencer Cooper.)

Wolfe county is in Middle-Eastern Kentucky and was made a county in 1860. It was formed out of territory taken from the counties of Morgan, Breathitt, Owsley and Powell, and was named in honor of Nathaniel Wolfe, a prominent attorney of Louisville. The county is bounded on the north by Menifee and Morgan, on the east by Breathitt and Magoffin, on the south by Breathitt and Lee, and on the west by Lee and Powell.

It is well watered and drained. The North Fork of the Kentucky river flows along the western and southern boundaries of it. Red river flows through the county from east to west, and the nu-

merous tributaries flowing into these two rivers afford very perfect drainage for the county, besides furnishing an abundant water supply. The North Fork of the Kentucky river is navigable for boats and rafts or fleets of timber during a great portion of the year.

The soil of this county is good and adapted to corn, wheat, rye, oats, sorghum, potatoes, and, in fact, fruits of all kinds grow well here; while this county is not an agricultural county, compared with the counties of the interior of this State, still the soil is good, and nearly everybody owns land and raises an abundance of grain and vegetables for sustenance.

This county is well adapted to stock raising, especially sheep, hogs and cattle—none better for sheep. It is well timbered; large areas of it are still covered by fine timber; the principal kinds are oak, poplar, walnut, chestnut, beech, pine and maple.

The greater part of this county is underlaid with veins of bituminous and cannel coal, ranging from two to six feet in thickness. It is possible that there is much building stones, workable clays, as well as both gas and oil to a considerable extent; and while all these mineral deposits are here, there has been very little development as yet; but the prospects for development are a little flattering at this time. The eastern part of the county, three miles east of Hazel Green, has three strong wells of natural gas now supplying that town with both fuel and light, and the supply is apparently inexhaustible; oil is also found about Hazel Green, of very fine "green" quality, but development in that line is just beginning. Campton, the county seat, ten miles west of Hazel Green, is one of the best if not the best, producing field of oil in Kentucky. There are fifty or sixty wells now and new ones coming in every week. Many natural curiosities and strange formations are here.

Many springs whose waters possess medicinal virtues are in the county.

In educational facilities Wolfe is not surpassed by any county in eastern Kentucky. Hazel Green Academy at Hazel Green, has an annual attendance of nearly 1,000, the year being divided into three terms, and the Kentucky Wesleyan Academy at Campton has a handsome attendance. The first named has turned out a large number of first class teachers. Besides the Hazel Green Herald, founded March 4, 1885, and the Campton Courier, about 1900, disseminates

the news, and they both have been instrumental in suppressing lawlessness in their respective fields.

This county affords many good locations for mills and factories, no better place at this time in which to invest capital in timber and coal lands; only one railroad, the L. & E., touches this county at the present, and it runs along just in the edge of the county for a distance of about ten miles; the O. & K. runs through the eastern end of the county for about six miles.

The Mountain Central, a narrow gauge, taps the L. & E. below Torrent, and now runs to Campton, 10 miles, and will probably be built to Hazel Green, 10 miles further within twelve months.

A splendid flouring mill, roller process, is in operation at Hazel Green.

Travel has been greatly facilitated since our last report by the placing of iron bridges across Red river, at Hazel Green., Daysboro, Stillwater creek and Lacy creek.

There are a great many public roads in this county, but they are all dirt roads, which are excellent during the dry season of the year; they are maintained by the county by labor under the general laws of this State.

The staple products of Wolfe county farms are corn, wheat, oats, hay and some tobacco. Farm labor is performed by native white and colored hands, and their services can be had for from \$10 to \$15 per month, with board of hands; hands working in the timber and at saw mills get for their labor ten cents per hour with board.

Cattle, horses, sheep and hogs are raised. Nearly all kinds of grasses grow well here, especially clover, timothy, red top, orchard and English bluegrass, seeming to be well adapted to our soil.

Wolfe county is in the Tenth Congressional, Seventh Appellate, Twenty-third Judicial, Thirty-fourth Senatorial and Ninety-first Legislative Districts.

WOODFORD COUNTY.

(Revised 1907 by J. W. Newman, Versailles.)

Woodford county stands last in an alphabetical list of the counties of Kentucky, but is one of the first in importance. It was organized in 1789 by Virginia and was the last of the nine counties

organized previous to the admission of Kentucky into the Union. This county was named for General William Woodford, a Revolutionary soldier, much admired at this time. Versailles, called for Versailles, France, was made the county seat. Woodford was originally a large county, but portions were taken off from time to time in forming other counties, until it is now one of the small counties of the State in area and has a peculiar shape, strongly resembling the State in this respect. Its area is 185 square miles. It is bounded on the north by Franklin and Scott counties, on the east by Fayette and Jessamine; on the south and southwest by Mercer and on the west by Anderson. Kentucky river flows between this county, Mercer and Anderson, bordering Woodford for a distance of thirty-five miles. The river hills are almost the only poor land in the county, the remainder being about the most fertile in the State. The ground is generally slightly rolling, with numerous small streams flowing toward the Kentucky river. The soil is a deep rich loam, with a clay subsoil, and underneath this is limestone rock, rich in fertilizing ingredients.

Woodford is in the heart of the "bluegrass region" and is known as the "Asparagus Bed of the World." Here the Bluegrass grows wild and the red clover has long found a welcome home; alfalfa has lately proven well adapted to this soil and timothy hay from this county is eagerly sought after in the city markets. Corn, wheat, oats, rye and barley yield large amounts per acre, and with grass, grain and water in abundance stock of all kinds naturally thrive. Here can be found the homes of many famous runners, trotters and saddle horses. Thoroughbred cattle, sheep and hogs are given a good deal of attention in this county.

Woodford stands fourth in the amount of white Burley tobacco produced by the tobacco-growing counties of the State. Last year's production was near 5,000,000 pounds. The quality is good and the yield large. Hemp is grown to a considerable extent.

Poultry raising, dairying, fruit growing and gardening receive some attention. Immigrants to this county will find a good opportunity in either of these lines.

There are few manufactories in the county. A canning factory and a home laundry to do household laundry are most needed.

A modern creamery has recently been erected and is doing well. It pays the farmers of this community over \$1,000 a month.

642 *Seventeenth Biennial Report Bureau of Agriculture.*

The main line of the Southern railroad from St. Louis to Florida passes entirely through the county from west to east. Versailles, population 3,000, is on this line. The Louisville & Nashville passes through the northern part of the county. Midway, population 1,500, is reached by this line as well as by the Versailles & Georgetown branch of the Southern Railway. The Louisville & Atlantic road extends from Versailles to Beattyville junction in Lee county, a distance of eighty miles, and connects with the Lexington & Eastern road. The L. & A. penetrates one of the richest coal and timber sections of the State. An electric line is now in operation from Lexington to Versailles. This line is being extended to Frankfort, and will be completed by January 1, 1908.

There are over 200 miles of well-kept free turnpikes in the county. The property of the county is taxed 25 cents on the \$100 to keep these up, 8 cents for railroad bonds and five cents for general expenses, a total of 38 cents, probably the lowest rate of any county in the State.

The educational facilities in the county are of the best. The Ashland Seminary, under the auspices of the Protestant Episcopal Church, is located at Versailles and occupies a handsome building donated by Mrs. J. B. Haggin, of New York City, a former resident of this county. Rose Hill Academy is also located at Versailles. The Midway Female Orphan School and the Cleveland Orphan School for girls are turning out as graduates some of the brightest and best educated girls in the country. The public schools of the county and the Versailles graded school can not be excelled.

With low taxes, with free turnpikes, with eight free rural delivery routes, with an electric line, a fine telephone system for city and country, fine educational advantages, with land from \$10 to \$150 per acre, Woodford county invites respectable immigrants.

The county has room for and desires more such celebrated stock farms as Woodburn, Nantura, Stonewall, Hartland Stud, Daytonia, Glenartney, Glen Lake, Glen Brook, Maple Hill, Buck Run, Highland and others. It also has room for intelligent and industrious laboring men. It has a law-abiding, intelligent and industrious population and welcomes immigrants of "like faith and order."

Woodford county is situated in the Seventh Congressional, Fifth Appellate, Fourteenth Judicial, Twenty-second Senatorial and Fifty-ninth Legislative Districts.

SOME OF THE

Leading Cities of Kentucky.

ASHLAND.

(Revised 1907 by the Commercial Club.)

Situated 150 miles above Cincinnati on the Ohio, Ashland nestles among the vine-clad hills. Here are the rock-ribbed Ohio hills on her front with the great Ohio flowing full-freighted to the Father of Waters. To the south and west are stretches of hilly woodland, dotted with prosperous homes, churches and schools. The scenery along the well-known "Horse-shoe Bends" is scarcely surpassed by our great Western country.

In the heart of the city is Central Park, a virgin forest of 50 acres, acknowledged to be the finest natural park in the Middle West. To the east is Clyffeside Park, a veritable dream of beauty. Grounds are ideal, diversified by hill dale and extensive forest. There are fine lakes, cool retreats, cozy nooks, rustic bridges, picturesque views, pavilions, band stands, rest cottages and a splendid Casino seating 3,000 people. There are also picnic grounds and a ball park.

The Ashland public schools are thoroughly organized on the most approved modern lines. The course covers twelve years, eight in the grades and full four years in the high school. The course in the grades covers the usual ground including literature, vocal music, nature-study, and physical culture. Choice of five courses is offered in the high school. There are four years of Latin, of English, of German, of Science, of Mathematics, of History, three years of French, two years of Greek—all under instructors from the best colleges, and with the finest of equipment in the way of buildings and laboratories. Our high school graduates are admitted without examination to all the leading colleges including Ohio State University, Ohio Wesleyan University, Dartmouth, Vanderbilt, Woman's College of

Baltimore, Wellesley and all our State colleges. Splendid church buildings with superior equipment make possible the largest success of the most modern and aggressive methods. Graded Sunday Schools with trained instructors, Men's and Boy's Clubs with reading rooms, offer facilities of greatest advantage for the social and spiritual culture of both old and young. The mingling of the denominations in multiplied union services in which good fellowship is dominant, is like the mellow notes of silver chimes at vespers. Added to this is an aggressive, eloquent ministry, working in unison for the general uplift of the city, which builds for us an unsurpassed church-home life.

The Y. M. C. A. has a splendid \$25,000 building with library, baths and sleeping rooms. The King's Daughters' Hospital is a splendidly managed up-to-date institution.

Ashland has ten miles of brick and bitulithic street paving constructed under excellent specification, rigidly interpreted. There are no better paved streets. Brick is of the first quality, laid on concrete base with cement filler. The curb and gutter are of concrete. The street railway tracks are of grooved girder rails laid on a heavy concrete base. Cement sidewalks have been adopted as standard construction and are replacing the red brick formerly used. Sewers ranging in diameter from 10 inches to 63 inches are built in all the principal streets and alleys.

The City of Ashland obtains its water supply from the Big Sandy river, going seven miles from the city to obtain the supply of pure water. The Big Sandy river is a mountain stream having a drainage of four thousand square miles. The water is pumped to a series of reservoirs, four in number, having a capacity for storing twenty millions gallons, which is enough to supply the city for eight days. The plant is equipped with the most improved system for the purification of the water and has a pumping capacity far in excess of all demands. There are in the system twenty-eight miles of mains ranging from four inches to twenty inches and within the corporate limits there are located on the mains 157 double nozzle fire hydrants for protection against fire. The water pressure is maintained constantly at eighty-five pounds, which can be increased to one hundred and twenty-five pounds reservoir pressure if needed.

We have Western Union and Postal Telegraph offices and a splendid telephone system.

The banking institutions of the community consist of four National banks and two State banks and trust companies, having in all a combined capital, surplus and undivided profits amounting to \$1,000,000.00 and deposits amounting to \$2,550,000.00. Their loans and investments amount to \$2,700,000.00. This in addition to two Home Building Associations with \$1,250,000.00 capital provides ample funds for all commercial and industrial enterprises.

The completion of several branch lines of railroad during the past few years has enabled our wholesale merchants to extend their business throughout Eastern Kentucky, a very large portion of West Virginia, Ohio and Virginia. At the present time our wholesale merchants and packing houses employ 32 traveling salesmen and do an annual business of \$3,000,000.00.

Ashland is so situated that it might be termed the gateway of all the lumber and timbers produced in southwestern West Virginia and northeastern Kentucky, which section comprises perhaps more standing timber today than any other section of equal size in the United States. The timber consists largely of oak, poplar, hemlock, lynn or basswood, hickory, beech and yellow pine. There is manufactured and handled in and near Ashland, each year, some 200,000,000 feet of the various kinds of lumber and timber, amounting to some \$4,000,000.00. Ashland is one of the principal centers for the manufacture of poplar lumber in the United States.

The Ashland Fire Brick Co. has five plants with a combined capacity of 75,000 brick per day and employs about 500 men.

Ashland Iron and Mining Company conducts a varied industry. They have in operation furnaces—two stacks—coke ovens, cement mill, mines and general stores. The furnaces manufacture strong foundry, high Silicon and Bessemer ferro-silicon pig iron with an output of 200 tons a day. The furnaces run 365 days per year and employ 500 men.

The Ashland Steel Company manufactures Bessemer Steel Billets, Slabs and Bessemer wire rods. Their daily output, 24 hours, is 600 tons Bessemer steel, 300 tons Bessemer wire rods. This company employs 750 to 800 hands. They produce a quality of steel and rods that is not excelled, have shipped their product to nearly all the large manufacturers in the United States and a trial order has always been followed by inquiry for larger tonnage; quality of product is known throughout the United States.

The product of the Ashland Sheet Mill Company's plant is about 24,000 tons per year, composed of black galvanized flat sheets and the various forms of painted and galvanized roofings. They employ about 450 men, all of whom are skilled to a more or less extent. Raw material is in the form of a billet of home manufacture. This is broken down to a sheet bar, from which the sheet is made, after which the same goes through the process of cold rolling, annealing, and galvanizing, when it is ready for the market.

The Norton Iron Works make pig iron, steel cut nails, wire nails, barbed wire, etc., and employ between 600 and 700 hands.

The Ashland Leather Company operates an up-to-date tannery, turning out 400 heavy packer hides per day and employs 125 hands.

We have two ice factories that make 70 tons daily. Two roller flour mills make 300 barrels of flour and 1,000 barrels of meal daily besides thousands of bushels of chop.

Transportation is the most important factor to the manufacturer and the manufacturing community. Indeed there can be no "manufacturing community" without ample water or railroad transportation, and the fact that our city has doubled in population in the past eight years, that new industries have been added and every industry has been constantly in operation without a single failure in ten or fifteen years is the best evidence that there is no lack in this respect.

BELLEVUE.

(Revised 1907 by Chas. A. Patzold.)

Bellevue is probably the largest town of its years in the State, situated on the Ohio river, opposite Cincinnati, Ohio, and adjoining Newport, Ky., on the east. It was projected in the year 1866, by Col. A. S. Berry, who platted fifty-two lots, which were added to by adjacent property owners, until now the number of lots is over 2,500, on which there are between 1,400 and 1,500 dwellings. It is essentially a suburb of Cincinnati, Ohio, nine-tenths of its inhabitants doing business and being employed there; five cents fare and twenty minutes' time takes one to Fountain Square in Cincinnati.

A new \$40,000 High School building and two large public school buildings of nine rooms each are attended by over 900 pupils. One

German and one English Catholic parochial school together contain 400 pupils.

The oldest church is a Methodist Episcopal, there being six altogether, viz.: English Lutheran, Christian, German Evangelical, English Catholic and German Catholic.

It has one prosperous bank but much of its banking business is done in Newport and Cincinnati. Loan and savings associations are numerous, there being four with a weekly total deposit of four to five thousand dollars in small sums, being the savings of wage-earners. The funds are loaned mostly for the erection of homes.

Electric trolley railways run cars at intervals of three minutes to Newport and Cincinnati, also to Fort Thomas and Dayton. The main line of the Chesapeake & Ohio railway runs through the town bringing coal in cheap competition with the Ohio river. A private corporation furnishes water from Newport reservoir, giving complete fire protection. The same company also furnishes street gas light and electric light.

A new complete system of sewers has been installed at a cost of about \$65,000.00.

Steps are now under way to pave all the principal streets with brick or other material and we expect to have the necessary power granted us by the next Legislature.

The fire department consists of three hose reels and ladder wagon, stationed in livery stables with swinging harness and quick notification by the fire alarm telegraph. The police act as firemen as well and consist of a chief, two night patrolmen and a special, under the direction of the mayor.

The Balke Opera House and Town Hall is a handsome edifice, erected in 1886 at a cost of \$35,000.

There are no parks nor factories, nor would any special inducements be offered, although the low price of ground, the great amount of skilled labor and proximity to the cities of Cincinnati Newport and Covington, cheap fuel on the C. & O., or Ohio river and convenient shipping facilities should commend it to those looking for a favorable manufacturing site.

CARROLLTON.

(Revised 1907 by Wm. F. Schuerman, Mayor.)

Carrollton, the county seat of Carroll county, a city of the fourth class, is situated on the Ohio river at the mouth of the Kentucky river, and covers an area of one square mile. The site is ideal for a large city. The inhabitants number over 3,000, of whom 300 are negroes.

The principal articles manufactured are lumber, whisky and tobacco. The Carrollton Furniture Manufacturing Company makes high grade furniture exclusively, has large sample rooms at Grand Rapids, Mich., and its furniture has given Carrollton national prominence. Henry Schuerman is the president of the company and to his enterprise and efforts the success of the institution is largely due. This factory not only has a fine trade in the United States but it makes large shipments to Canada, Mexico and South America.

Adkinson Brothers Company own and operate one of the best saw and planing mills in the country, do an extensive business and ship a great deal of lumber south. Jett Brothers distilling Company manufacture "Richland" Whisky and have a large and up-to-date plant on the Kentucky river. Across the Kentucky river in Prestonville is the Block Distillery where "Old Darling" whisky is made. This distillery is under the management and control of the Kentucky Distilleries and Warehouse Company. The Carrollton Brick Yard Company makes a good, first class brick. Their output annually is two millions. They furnished a large amount of brick for the new State capitol at Frankfort.

The American Tobacco Company now owns and operates the re-handling plant formerly owned by M. I. Barker & Co. This is said to be the largest plant of its kind in the world.

The large Bodman warehouse is now used as an Equity barn.

Among other manufactories are J. F. Hill & Sons' Tobacco Factory, Cameron & Co.'s Roller Mills, Wood Brothers Plow Factory, Ebbing's Broom Factory, Carrollton Sand & Gravel Company, Ca-Tha Bottling Works, an ice plant and a creamery.

Carrollton has two national banks, four hotels, an opera house,

two weekly newspapers, two livery stables, three drug stores, three saloons several dry goods and clothing stores, a number of general stores, groceries, wholesale and retail, etc., representing the various lines of merchandising.

The Independent Long Distance Telephone & Telegraph Company has an exchange of about 400 subscribers. The Cumberland Telephone company has no exchange but has a long distance office at the edge of town.

At the end of Sixth street is a Blue Lick Spring from which constantly flows a mineral water of great medicinal properties.

The city is lighted by electricity and has a splendid system of water works. Fire protection is ample. The water supply is the Ohio river; the reservoir is situated on Butler's Hill back of the city and affords 110 pounds pressure. The fire department consists of 36 part paid men, 1,000 feet of hose and other equipment.

Carrollton is said to be the smallest city in the nation having a United States Government building. This is a very handsome structure, was built at a cost of \$35,000.00 and was obtained for this city through the influence of Hon. A. S. Berry, of Newport, a former Congressman from this district.

A Commercial Club of about seventy-five progressive and enterprising citizens are diligently seeking to promote the interests and welfare of the city, especially from an industrial standpoint. It was through their endeavors and perseverance that the railroad to Worthville was built thereby connecting our manufactories with the L. & N. "Short Line" and the outside world.

Now that the manner of ingress and egress is so abundant, on account of the Ohio river, the Kentucky river and the Carrollton & Worthville railroad, freight rates are the very lowest. The natural location of the city makes it a very desirable site for manufactories of all kinds and it is predicted that Carrollton will soon become an industrial center. Labor conditions here are the best. The town is gradually growing; new buildings are under construction and no dwellings or business houses vacant.

The city's board of school trustees is ever looking to the betterment of educational conditions and effort is made to keep up with the procession in broadening the views, improving the environments and in leading the minds and souls of the city's children to what is right, best and happiest. The public schools occupy two

CARROLLTON.

(Revised 1907 by Wm. F. Schuerman, Mayor.)

Carrollton, the county seat of Carroll county, a city of the fourth class, is situated on the Ohio river at the mouth of the Kentucky river, and covers an area of one square mile. The site is ideal for a large city. The inhabitants number over 3,000, of whom 300 are negroes.

The principal articles manufactured are lumber, whisky and tobacco. The Carrollton Furniture Manufacturing Company makes high grade furniture exclusively, has large sample rooms at Grand Rapids, Mich., and its furniture has given Carrollton national prominence. Henry Schuerman is the president of the company and to his enterprise and efforts the success of the institution is largely due. This factory not only has a fine trade in the United States but it makes large shipments to Canada, Mexico and South America.

Adkinson Brothers Company own and operate one of the best saw and planing mills in the country, do an extensive business and ship a great deal of lumber south. Jett Brothers distilling Company manufacture "Richland" Whisky and have a large and up-to-date plant on the Kentucky river. Across the Kentucky river in Prestonville is the Block Distillery where "Old Darling" whisky is made. This distillery is under the management and control of the Kentucky Distilleries and Warehouse Company. The Carrollton Brick Yard Company makes a good, first class brick. Their output annually is two millions. They furnished a large amount of brick for the new State capitol at Frankfort.

The American Tobacco Company now owns and operates the re-handling plant formerly owned by M. I. Barker & Co. This is said to be the largest plant of its kind in the world.

The large Bodman warehouse is now used as an Equity barn.

Among other manufactories are J. F. Hill & Sons' Tobacco Factory, Cameron & Co.'s Roller Mills, Wood Brothers Plow Factory, Ebbing's Broom Factory, Carrollton Sand & Gravel Company, Catha Bottling Works, an ice plant and a creamery.

Carrollton has two national banks, four hotels, an opera house,

two weekly newspapers, two livery stables, three drug stores, three saloons several dry goods and clothing stores, a number of general stores, groceries, wholesale and retail, etc., representing the various lines of merchandising.

The Independent Long Distance Telephone & Telegraph Company has an exchange of about 400 subscribers. The Cumberland Telephone company has no exchange but has a long distance office at the edge of town.

At the end of Sixth street is a Blue Lick Spring from which constantly flows a mineral water of great medicinal properties.

The city is lighted by electricity and has a splendid system of water works. Fire protection is ample. The water supply is the Ohio river; the reservoir is situated on Butler's Hill back of the city and affords 110 pounds pressure. The fire department consists of 36 part paid men, 1,000 feet of hose and other equipment.

Carrollton is said to be the smallest city in the nation having a United States Government building. This is a very handsome structure, was built at a cost of \$35,000.00 and was obtained for this city through the influence of Hon. A. S. Berry, of Newport, a former Congressman from this district.

A Commercial Club of about seventy-five progressive and enterprising citizens are diligently seeking to promote the interests and welfare of the city, especially from an industrial standpoint. It was through their endeavors and perseverance that the railroad to Worthville was built thereby connecting our manufactories with the L. & N. "Short Line" and the outside world.

Now that the manner of ingress and egress is so abundant, on account of the Ohio river, the Kentucky river and the Carrollton & Worthville railroad, freight rates are the very lowest. The natural location of the city makes it a very desirable site for manufactories of all kinds and it is predicted that Carrollton will soon become an industrial center. Labor conditions here are the best. The town is gradually growing; new buildings are under construction and no dwellings or business houses vacant.

The city's board of school trustees is ever looking to the betterment of educational conditions and effort is made to keep up with the procession in broadening the views, improving the environments and in leading the minds and souls of the city's children to what is right, best and happiest. The public schools occupy two

CARROLLTON.

(Revised 1907 by Wm. F. Schuerman, Mayor.)

Carrollton, the county seat of Carroll county, a city of the fourth class, is situated on the Ohio river at the mouth of the Kentucky river, and covers an area of one square mile. The site is ideal for a large city. The inhabitants number over 3,000, of whom 300 are negroes.

The principal articles manufactured are lumber, whisky and tobacco. The Carrollton Furniture Manufacturing Company makes high grade furniture exclusively, has large sample rooms at Grand Rapids, Mich., and its furniture has given Carrollton national prominence. Henry Schuerman is the president of the company and to his enterprise and efforts the success of the institution is largely due. This factory not only has a fine trade in the United States but it makes large shipments to Canada, Mexico and South America.

Adkinson Brothers Company own and operate one of the best saw and planing mills in the country, do an extensive business and ship a great deal of lumber south. Jett Brothers distilling Company manufacture "Richland" Whisky and have a large and up-to-date plant on the Kentucky river. Across the Kentucky river in Prestonville is the Block Distillery where "Old Darling" whisky is made. This distillery is under the management and control of the Kentucky Distilleries and Warehouse Company. The Carrollton Brick Yard Company makes a good, first class brick. Their output annually is two millions. They furnished a large amount of brick for the new State capitol at Frankfort.

The American Tobacco Company now owns and operates the re-handling plant formerly owned by M. I. Barker & Co. This is said to be the largest plant of its kind in the world.

The large Bodman warehouse is now used as an Equity barn.

Among other manufactories are J. F. Hill & Sons' Tobacco Factory, Cameron & Co.'s Roller Mills, Wood Brothers Plow Factory, Ebbing's Broom Factory, Carrollton Sand & Gravel Company, Catha Bottling Works, an ice plant and a creamery.

Carrollton has two national banks, four hotels, an opera house,

two weekly newspapers, two livery stables, three drug stores, three saloons several dry goods and clothing stores, a number of general stores, groceries, wholesale and retail, etc., representing the various lines of merchandising.

The Independent Long Distance Telephone & Telegraph Company has an exchange of about 400 subscribers. The Cumberland Telephone company has no exchange but has a long distance office at the edge of town.

At the end of Sixth street is a Blue Lick Spring from which constantly flows a mineral water of great medicinal properties.

The city is lighted by electricity and has a splendid system of water works. Fire protection is ample. The water supply is the Ohio river; the reservoir is situated on Butler's Hill back of the city and affords 110 pounds pressure. The fire department consists of 36 part paid men, 1,000 feet of hose and other equipment.

Carrollton is said to be the smallest city in the nation having a United States Government building. This is a very handsome structure, was built at a cost of \$35,000.00 and was obtained for this city through the influence of Hon. A. S. Berry, of Newport, a former Congressman from this district.

A Commercial Club of about seventy-five progressive and enterprising citizens are diligently seeking to promote the interests and welfare of the city, especially from an industrial standpoint. It was through their endeavors and perseverance that the railroad to Worthville was built thereby connecting our manufactories with the L. & N. "Short Line" and the outside world.

Now that the manner of ingress and egress is so abundant, on account of the Ohio river, the Kentucky river and the Carrollton & Worthville railroad, freight rates are the very lowest. The natural location of the city makes it a very desirable site for manufactories of all kinds and it is predicted that Carrollton will soon become an industrial center. Labor conditions here are the best. The town is gradually growing; new buildings are under construction and no dwellings or business houses vacant.

The city's board of school trustees is ever looking to the betterment of educational conditions and effort is made to keep up with the procession in broadening the views, improving the environments and in leading the minds and souls of the city's children to what is right, best and happiest. The public schools occupy two

CARROLLTON.

(Revised 1907 by Wm. F. Schuerman, Mayor.)

Carrollton, the county seat of Carroll county, a city of the fourth class, is situated on the Ohio river at the mouth of the Kentucky river, and covers an area of one square mile. The site is ideal for a large city. The inhabitants number over 3,000, of whom 300 are negroes.

The principal articles manufactured are lumber, whisky and tobacco. The Carrollton Furniture Manufacturing Company makes high grade furniture exclusively, has large sample rooms at Grand Rapids, Mich., and its furniture has given Carrollton national prominence. Henry Schuerman is the president of the company and to his enterprise and efforts the success of the institution is largely due. This factory not only has a fine trade in the United States but it makes large shipments to Canada, Mexico and South America.

Adkinson Brothers Company own and operate one of the best saw and planing mills in the country, do an extensive business and ship a great deal of lumber south. Jett Brothers distilling Company manufacture "Richland" Whisky and have a large and up-to-date plant on the Kentucky river. Across the Kentucky river in Prestonville is the Block Distillery where "Old Darling" whisky is made. This distillery is under the management and control of the Kentucky Distilleries and Warehouse Company. The Carrollton Brick Yard Company makes a good, first class brick. Their output annually is two millions. They furnished a large amount of brick for the new State capitol at Frankfort.

The American Tobacco Company now owns and operates the re-handling plant formerly owned by M. I. Barker & Co. This is said to be the largest plant of its kind in the world.

The large Bodman warehouse is now used as an Equity barn.

Among other manufactories are J. F. Hill & Sons' Tobacco Factory, Cameron & Co.'s Roller Mills, Wood Brothers Plow Factory, Ebbing's Broom Factory, Carrollton Sand & Gravel Company, Catha Bottling Works, an ice plant and a creamery.

Carrollton has two national banks, four hotels, an opera house,

two weekly newspapers, two livery stables, three drug stores, three saloons several dry goods and clothing stores, a number of general stores, groceries, wholesale and retail, etc., representing the various lines of merchandising.

The Independent Long Distance Telephone & Telegraph Company has an exchange of about 400 subscribers. The Cumberland Telephone company has no exchange but has a long distance office at the edge of town.

At the end of Sixth street is a Blue Lick Spring from which constantly flows a mineral water of great medicinal properties.

The city is lighted by electricity and has a splendid system of water works. Fire protection is ample. The water supply is the Ohio river; the reservoir is situated on Butler's Hill back of the city and affords 110 pounds pressure. The fire department consists of 36 part paid men, 1,000 feet of hose and other equipment.

Carrollton is said to be the smallest city in the nation having a United States Government building. This is a very handsome structure, was built at a cost of \$35,000.00 and was obtained for this city through the influence of Hon. A. S. Berry, of Newport, a former Congressman from this district.

A Commercial Club of about seventy-five progressive and enterprising citizens are diligently seeking to promote the interests and welfare of the city, especially from an industrial standpoint. It was through their endeavors and perseverance that the railroad to Worthville was built thereby connecting our manufactories with the L. & N. "Short Line" and the outside world.

Now that the manner of ingress and egress is so abundant, on account of the Ohio river, the Kentucky river and the Carrollton & Worthville railroad, freight rates are the very lowest. The natural location of the city makes it a very desirable site for manufactories of all kinds and it is predicted that Carrollton will soon become an industrial center. Labor conditions here are the best. The town is gradually growing; new buildings are under construction and no dwellings or business houses vacant.

The city's board of school trustees is ever looking to the betterment of educational conditions and effort is made to keep up with the procession in broadening the views, improving the environments and in leading the minds and souls of the city's children to what is right, best and happiest. The public schools occupy two

large two story brick buildings both of which have large play grounds. One of these houses the primary and intermediate departments and the other grammar and high school. An efficient corps of teachers is provided. Besides the graded schools there is a St. John's Catholic school as well as a free school for colored children.

The citizens of Carrollton are church-going people and the following churches are represented: Methodist E. Church, South; Baptist, Presbyterian, Christian and St. John's Catholic, all of whose houses of worship are imposing edifices of brick and stone. The colored Baptists and Methodists are also represented. There are many social organizations and all the leading fraternal and benevolent societies.

Carrollton occupies a peaceful and fertile valley with rugged hills on either side and other hills across La Belle Riviere on the Indiana shore. To lovers of nature and art the scenery strongly appeals and is sure to arouse one's aesthetic emotion. Carrollton has beautiful residences and shady drives. It has parallel streets and regular blocks of which few Kentucky towns can boast.

The sunsets viewed from the "point," looking out over the beautiful Ohio just below the mouth of the Kentucky, are said to be as beautiful as any in the world, those of Italy alone comparing with them. Carrollton boasts of having the most beautiful kept Court House yard in the State not even excepting the one at Lexington.

The Kentucky river furnishes ample harbor for the water craft during the severe winter weather. A fine iron bridge spans the Kentucky here connecting Carrollton and Prestonville.

COVINGTON.

(Revised 1907 by W. S. Gould.)

Covington, the second city in the State, is situated in Kenton county on the Ohio river, opposite the city of Cincinnati, Ohio. It is directly across the Licking river from the city of Newport, Ky., with which it is connected by two splendid bridges, which are crossed by electric car lines.

In 1900 the town of Central Covington was annexed to Covington.

tion, increasing Covington's population about 4,000, and adding \$1,200,000 to its taxable property.

The city possesses great advantages as a manufacturing point on account of its shipping facilities furnished by the Ohio and Licking rivers and the several railroads entering there. The L. & N., Kentucky Central division of the L. & N., Queen & Crescent and the Chesapeake & Ohio system enter Covington and render the city accessible from all points. The Covington & Cincinnati elevated railroad and transfer bridge afford facilities for freight to all points west, northwest, north and east of Cincinnati. There are located here a large cotton mill, an extensive cordage plant, the Tranter Rolling Mill and Droege's Licking Roller Mills. The latter plant manufactures all kinds of bar iron and has in connection with the rolling mill a tin plate mill. The company employs 500 men. We have three large brick-making plants. There are a number of extensive tobacco manufactories. There are a number of smaller manufacturing plants. There are forty-one miles of paved streets, asphalt, macadamized and vitrified brick, and the system is being extended.

The Covington and Cincinnati suspension bridge has recently been improved to the extent of having double street car tracks with space enough between the inner rails to permit wagons passing without interference with rapid transit from Covington to Cincinnati by the electric street-car lines.

The public school facilities of the city, while good, are not fully up to the requirements of the rapidly-increasing population, and at least two more commodious buildings will be erected in the near future. There is a high school building, five large district school buildings, one building which was secured to accommodate pupils from the overcrowded condition of one of the district schools. There is a fine school building for negro children and the system of teaching is the same as in the white schools. There are four kindergarten schools.

The churches embrace all denominations and the buildings are some of the finest in the State. There are eight Baptist, nine Methodist Episcopal, two Protestant Episcopal, three Presbyterians, eleven Roman Catholic, and others. A large Catholic cathedral is now completed, and is the finest church edifice in the State. It cost not less than \$300,000.

There are four national banks with ample capital and two trust companies.

The water supply is obtained from the Ohio river five miles above Newport, and is the best water that can be obtained in this vicinity. The reservoirs are three in number, and are located on the high grounds near Fort Thomas. The pressure from the mains will throw water over the highest buildings in the city.

The city is supplied with light by an extensive gas plant and by a large electric light plant.

The fire department is first-class and no disastrous fires have occurred during the past five years. The police force is efficient, and consists of a chief, forty-six patrolmen, officered by three lieutenants, a sergeant and a detective.

We maintain two jails, city and county. This is caused by the failure to bring the county seat from Independence, two years ago.

The value of property assessed for taxation is over \$25,000,000, and the tax rate is \$1.70 on the \$100 valuation. A new court house has been erected on the old court house grounds. It is more than double the size of the old one and cost \$225,000. It is one of the finest edifices of the kind in the State.

CYNTHIANA.

(Revised 1907 by Chester M. Jewett.)

Sturdy and beautiful Cynthiana, nestled like a star in the corona of the Licking valley, is one of the most attractive municipalities in the State of Kentucky. It is the county seat of Harrison county, one of the most fertile and prosperous counties in the State, and the city presents attractions and advantages from a mercantile point of view enjoyed by few places of her size. A historical and industrial review of Cynthiana would be a record of substantial growth and continued prosperity, which is an example and an inspiration to every community. Her people having become conscious to the grand opportunities by which they were surrounded and which they are by nature possessed, have taken advantage of them and pushed to the front in the interests of the city, attracting capital and

locating institutions which are a credit to the effort. In proper keeping with advancement of the business interests of the city, the people have kept up public improvements and made Cynthiana one of the most desirable residence cities in the State.

It is beautifully laid off in well shaded, macadamized streets, with brick, asphalt and artificial stone pavements and has many imposing residences and handsome business houses. Her system of water works, put in a few years ago at a cost of about \$50,000, is almost the best in the State. The latest improved machinery is used at the pumping station and the standpipe is of immense capacity. The educational facilities of the city are deservedly a public pride as Cynthiana has a most excellent public school system and several other institutions of education, including a female college and an excellent training school for young men. There are no less than ten flourishing churches which stand as evidence of the moral and religious culture of the citizens.

Cynthiana's railroad facilities are furnished by the Louisville & Nashville which reaches out in the great southern territory, touching the gulf at New Orleans and Pensacola connecting with the other great trunk lines at Cincinnati and St. Louis, giving easy access of shipment to all points in the United States. Probably the most important distilleries of Harrison county are distilleries and the stock farms with their headquarters at Cynthiana. There are four distilleries in the city, and about ten located elsewhere in direct proximity.

Stock raising is an important feature, the county being dotted with farms of this kind, many of which are very prominent. Two large flouring mills do an immense business.

There is no question as to the importance of Cynthiana as a trade center, for its business houses are conducted by some of the best known and most influential citizens, who are energetic, wide-awake and enterprising, doing their share towards building up the name and fame of the city.

Its financial institutions are notable for their solidity. They are careful, conservative and yet liberal in their policy towards patrons and the mercantile and business community generally. The individual heads of the banking houses have always been among the foremost citizens. As a location for manufacturing or a mercantile enterprise, Cynthiana offers great inducements to men of capi-

tal seeking suitable places for investment. The city is well represented in the matter of miscellaneous enterprise, but there is yet room for a much greater number, especially productive industries.

With ample facilities for transportation and an industrious population steadily increasing and widening the home market, the incentive to energy and rewards open to enterprise, exist here to an extent not excelled by any city of like size. To the manufacturer, the merchant, the man of affairs, the man having children to educate, Cynthia extends a cordial investigation of her claims.

The city lies in a valley surrounded by beautifully picturesque hills, on whose slopes pose many magnificent residences. Just east of the city one finds the silent, beautiful city of the dead known as Battle Grove, so called in memory of the terrible conflict which occurred on these grounds at the close of the civil war. Many of the present residents of Cynthia remember with distinct vividness the date, June 11, 1864, when the first engagement of Battle Grove occurred, between Col. Conrad Garis, commanding the 168th Ohio infantry and Gen. John H. Morgan's whole force, consisting of 1,200. The Federals were soon overpowered and fell back to the depot where Col. Berry was mortally wounded. The following day, Sunday, June 12th, 1864, found a reverse of the Confederate victory of the day before, for Burbridge marched into the town early in the morning and the tired, scattered forces of Morgan fell a prey in the unequalled conflict.

DANVILLE.

(Revised 1907.)

Danville, the county seat of Boyle, is a city of the fourth-class, with a population of six thousand. It is surrounded by a rich agricultural country which produces wheat, corn, hemp, etc., and which raises fat cattle and fine trotting, running and saddle horses.

The town is located on the Cincinnati Southern railway, one hundred and thirteen miles from Cincinnati. It is the terminal of the Southern railway in Kentucky where connections are made with the C. N. O. & T. P. R. R. Four miles south of Danville, at Junction City, is the intersection of the C. N. O. & T. P. and the

Louisville and Nashville railroads. Besides these railroad facilities, Danville has eight splendid turnpikes leading in all directions, which make the town the trading center of a large and finely populated region.

Danville has been noted as an educational center since the early years of the present century, when Center College (since consolidated with the Central University of Richmond and now known as the Central University of Kentucky), was founded. This college and other institutions of learning have sent out hundreds of graduates who have become famous in all the professions and in national affairs. Justice Harlan, Vice-President Stevenson, Governor Crittenden, Senator Vest, John C. Breckenridge, and hundreds of other men of eminence were educated in Danville. Besides Central University of Kentucky, there is Caldwell College for young ladies, and a number of lesser schools. The Kentucky school for the deaf, with an annual enrollment of 400, is also located in Danville.

Danville is noted for its handsome residences, its splendid streets, wide and well macadamized and sidewalked, its perfect system of water works, a complete system of modern sanitary sewers, its healthful location and its high moral tone. There has not been a licensed saloon in the town for twenty-five years and the violations of the local option laws are reduced to the minimum. Danville is the headquarters of the Eighth Revenue District.

The churches of Danville are the Presbyterian, Northern and Southern, the Methodist, the Christian, the Baptist, the Catholic and the Episcopalian.

The town has three national banks with aggregate individual deposits of \$800,000, and a building and loan association which has been in existence for fourteen years. The Kentucky Advocate, which has been one of the leading newspapers of the State for forty-seven years, is published tri-weekly.

The city government is energetic, but conservative, and the growth of the town has been steady and healthy for the past ten or fifteen years. The water system belongs to the city and yields a small surplus over the cost of operation.

DAYTON.

(Revised 1907 by Chas. A. Bird.)

The city of Dayton, in Campbell county, Kentucky, lies on the higher levels along the base of the hills on the southern shore of the Ohio river. These hills, with the country sloping southward for about fifteen miles, formed the southern limit of prehistoric Lake Ohio; their formation, therefore, differing in some important respects from that of the Ohio hills opposite. Thousands of beautiful building sites are found on the territory within the city lines, and the varied surface, with the bright sand underlying affords excellent natural drainage and insures the best health conditions.

In many respects Dayton is the most inviting of the suburbs about Cincinnati. The city has electric street car service, taking passengers to the heart of Cincinnati in twenty minutes; and the Chesapeake & Ohio railway has two passenger stations in the city. A good system of electric lighting makes the streets brilliant at night. The water works service is adequate for all domestic and manufacturing uses, and gives a fire protection so efficient that losses by fire are infrequent and light. The water supply comes from the river at a point far above any contamination from the cities on either side, and is clear and sparkling at times when floods in large and small tributaries foul the water supply of other places. The streets of Dayton are well constructed and well kept, while several turnpikes running eastward and southward afford opportunities for pleasant drives among the beautiful Kentucky hills. The markets are furnished with every staple and with all the delicacies that come from the four points of the compass. School advantages and church privileges are exceptionally good, and are mentioned with special emphasis.

Finally the public affairs of Dayton are so arranged as to make the tax burden light, while giving the people every facility and convenience of the most advanced modern cities.

The present manufacturing establishments are the Winchester

Distillery, Wadsworth Watch Case Company and Harvard Piano Company, and liberal inducements are given by the board of councilmen to all new industries.

Total tax duplicate as returned by board of supervisors in 1907, \$2,488,647. Rate \$1.35 on the \$100.

FRANKFORT.

(Revised 1907 by L. F. Johnson.)

A complete history of Frankfort would be, to some extent, a history of Kentucky. The men who have served the State at the capitol have been Kentucky's most gifted and illustrious sons, many of whom found the Vale City such a pleasant place in which to live, that they became citizens thereof at the expiration of their terms of office. A large per cent of the present population of Frankfort are descendents of governors, judges and other ex-State officials. There is not a city in the State where its people are more refined, hospitable or better educated.

The name "Frankfort" originated from two incidents, viz.: A white man by the name of Frank, while camping with other parties on the present site of the city, was killed by the Indians, and there was a ford across the Kentucky river just above the entrance to Devil's Hollow—Franks-ford afterwards became contracted to Frankfort.

The city was established by the Virginia Legislature in 1786 in Fayette county. In the year 1788, Woodford county was formed, and Frankfort was in Woodford from 1788 until Franklin county was created in 1794.

For the past fifty years, Frankfort has been fighting to retain the capitol, and to a great extent her energies have been exhausted by the struggle; now that the Legislature has settled that question and appropriated a million of dollars for a new building, there seems to be an awakening of all business interest and the improvement of the city is rapid and permanent. During the past few years, there have been built about twenty-five miles of granitoid sidewalks and nearly four miles of brick streets. Within the next five years, this city will not only be the healthiest and prettiest place, but it will

also be the best improved and one of the best business points in the whole county.

The conditions and surroundings of the city are such that many wealthy people are purchasing and building homes and many parents from the surrounding country are moving to the city in order to take advantage of the excellent schools.

The city has over 12,000 inhabitants. It is centrally located, the Kentucky river, the F. & C., I. & N., the C. & O. R. R., and the Frankfort and Versailles Electric Road furnishing easy communication with all parts of the State. The health of the city is excellent; it has not had an epidemic for the past century. - The death rate is less than any other city in the State. It has a good drainage and a fine system of waterworks, the natural pressure being next to the strongest in the State. The company furnishes water power for running machinery at a small cost. The protection from fire is excellent.

Frankfort's hotel accommodations are good and the rates are reasonable; private boarding houses are numerous; there are four hotels and eight restaurants. The hemp mills, known as the Kentucky River Mills, are run by a turbine wheel located at the lock. The fall of the water over the dam at that place would furnish power to run a dozen such wheels, furnishing an almost unlimited amount of power which should be utilized. A superior quality of potter's clay and a fairly good fire clay are found here and the birdseye limestone, or Kentucky river marble, is found in large quantity and of fine quality. U. S. Senator Jos. H. Paynter has built an elegant residence of this marble, which shows its fitness for that purpose. It will only be a short time when it will be quarried in unlimited quantities and shipped to all sections of the country. There is no better building stone in the whole country. The manufacturing of lumber, whisky, chairs, shoes and glass bottles are the chief industries.

Frankfort has eight distilleries or wholesale whisky houses, ten churches, two wholesale grocery stores, forty-nine retail groceries, eleven livery and feed stables, two newspapers and a law reporter, seven saw mills, six planing mills, seven coal firms, eight blacksmith shops, five banks, nine barber shops, two tobacco warehouses, eight drug stores, a brick yard, tobacco factory, two reel factories, in

which some of the finest reels ever made are manufactured. Shoes, chairs, skirts, chains, brooms, etc., are manufactured at the State penitentiary. Frankfort has twenty-seven physicians and thirty-five lawyers. It has one hundred and thirty-four merchandising stores, which includes groceries, hardware, clothing, boots and shoes and etc., nine wholesale houses, fourteen insurance firms, two laundries, five dentists and fifty-eight dray or truck haulers.

The Feeble-Minded Institute and the Colored State Normal School are located at the capital, and the excellent condition and good management of these State institutions is a strong argument for having all the eleemosynary institutions of the State at Frankfort, where they can have the personal supervision of the State officials.

If within the next year the proposed improvement of the Kentucky river will afford slack water navigation to the vast coal fields of Kentucky, and the Frankfort and Versailles Traction Co., completes its proposed line to connect with Versailles and Ky. Highlands Railway, as a competing line, the facilities for cheap transportation and cheap coal will make Frankfort the best location for manufactories in the State. The settlement of the capitol question has increased the value of real estate in the city from 10 to 50 per cent. A final completion of the capitol, according to the plans of the commissioners on the place selected, will make a most beautiful building and one of which every patriotic citizen of the State will be proud.

The two points of more interest than all else at the State capital are the rooms of the State Historical Society and the Frankfort Cemetery. Space will not permit us to name the hundreds of interesting things found in the historical rooms or even to mention the names of the illustrious men and women who have made this State and nation famous and whose names and deeds are written, not by the finger of God, but by the fingers of men, upon the stones found there, and not only are they written there, but they are engraved upon the hearts of grateful people who are now enjoying the fruits of the labor performed by these sainted dead.

GEORGETOWN.

(Revised 1907 by Arthur Yager.)

The site of Georgetown was no doubt determined by the famous Royal Spring, which sends forth a copious stream of clear cool water close to the center of the city. The value of this unfailing supply of splendid water, must have been fully appreciated by the early settlers of this region, and to this day, it is the most important single item in the list of the city's assets, furnishing, as it does, unaided, an abundant supply the year round of pure water for the waterworks and factories of a city of 5,000 inhabitants.

central part of Scott county equi-distant from Frankfort on the west, and Paris on the east, and twelve miles north of Lexington.

It is one of the most attractive of all the beautiful county capitals of central Kentucky, and the country immediately surrounding it is unsurpassed in all the bluegrass region. The city has three railroads, the Queen & Crescent, Frankfort & Cincinnati and Southern, besides an interurban electric line, connecting it with Lexington. There is besides a splendid system of turnpikes radiating from the city to all parts of the country. It is especially noted for its broad and beautifully shaded streets, for its numerous residences, and its handsome church edifices, four of which are of recent construction, and cost in the aggregate not less than \$80,000.

The town has in actual operation all the conveniences of a modern city, water works, gas works, telephone, fire department, electric light plant and electric street railway, and is just beginning the construction of a sewer system the bonds for which have been sold already.

Georgetown has been for more than a century a noted educational center. In 1798, the Kentucky Legislature named Georgetown as one of the points at which State Academies were to be located, and from that time to the present, the town has always been the home of famous schools. It was here that Bacon College, now Kentucky University, began its existence in 1836. It was here that

Thornton Johnson founded and for many years conducted his widely known Western Military Institute. And here at the present time is located Georgetown College, the great Baptist school, founded in 1829, and now, after seventy-seven years of uninterrupted usefulness, one of the largest, best equippe and most prosperous colleges in the entire south.

Here is also Cordome, a large convent school for girls maintained by the Roman Catholic Church.

In addition to these large institutions of learning, the city maintains an exceptionally good system of graded public schools for both white and colored races.

Georgetown has seven white and four colored churches, two newspapers, four banks, two very large and handsome hotels, and a large grain elevator. A new county jail, a dignified and substantial court house, and a fine new city hall, comprise the public buildings.

Georgetown recently leaped into great importance as a manufacturing center. A large board of trade composed of the most enterprising and public-spirited men of the community, have done invaluable service in advertising the city's undoubted advantages for manufacturing purposes. One result of these efforts is the establishment of the Indian Refining Co. in the outskirts of the city. This is one of the largest independent oil refining companies in America, and affords employment for hundreds of laborers of all grades. A large creamery has also been recently erected, and other mapufacturers are considering locating their plants on the banks of the Elkhorn river.

In addition to these newly established industries, there have been in successful operation for many years, two large flouring mills, a planing mill, a brick factory and an ice factory.

The population of the city by the Federal Census of 1900, was 3,860, now about 5,000. Assessment of taxable property of \$1,834,847. Bonded indebtedness \$39,000. Municipal tax rate for all purposes \$1.10.

HARRODSBURG.

(Revised 1907 by C. D. Thompson.)

Harrodsburg is not only the first permanent settlement of Kentucky but the first American settlement west of the Alleghanies. Capt. James Harrod and his men in the early spring of 1774 camped under a large Elm tree at this place and with the assistance of Daniel Boone, on June 16th, laid out a town site. The wisdom of the selection has been demonstrated by a steady increase in population and wealth. It is a beautiful and substantial town of 3,500 people. It is located on the St. Louis division of the Southern Railway, has six daily passenger trains, and a bus line connecting with trains on the Queen & Crescent Railway at Burgin, four miles distant. It is in the famous blue-grass region and is within four miles of the geographical center of the State. Kentucky river, navigable for steamers the entire year, is within eight miles. Mercer county has 215 miles of macadam roads, of which sixteen converge in the city and afford the best possible connection with a farming country of unsurpassed fertility.

Harrodsburg has more than fifty business houses, seven white and three colored churches, two newspapers, two flouring mills, electric light plant, ice factory, water works, laundry, two coal and lumber yards, two tobacco rehandling houses, grain elevator of 150,000 bushels capacity, poultry packing establishment, an opera house and city hall costing \$18,000.00. It has three banks and a complete abstract office.

In seeking a home, the paramount consideration is health. Harrodsburg has the mineral waters which made Old Graham Springs the famous health resort of the South. It also offers superior social, religious, educational, and commercial advantages. Beaumont College, Harrodsburg Academy, and a public graded school, and private teachers, contribute to these advantages. It has twenty

miles of macadam streets, with four miles of cement walks and has a number of residences costing from \$8,000.00 to \$40,000.00.

Mercer county yields to no county in the State in historic interest and importance, and Harrodsburg has a past history of which every citizen has reason to be proud.

HOPKINSVILLE.

(Revised 1907 by Chas. M. Meacham, Mayor.)

Hopkinsville, the county seat of Christian county, Ky., is two hours' travel by Louisville & Nashville railroad from Evansville, Ind.; and Nashville, Tenn., and seven hours from Louisville. It is finely located, well drained and healthful. Population including suburbs, is now estimated to be 11,200.

The Louisville & Nashville and Illinois Central railroads intersect here, traversing the best coal, grain and tobacco lands in Western Kentucky.

The white graded schools, three buildings, have 1,400 pupils; colored public schools, 1,300 pupils. Two flourishing colleges, Bethel Female, for young ladies, and South Kentucky, for both sexes, and other private schools and also a college for colored people. There are ten white and seven colored churches, representing the leading denominations.

Hopkinsville has one national, three State and one savings bank; capital, \$380,000, deposits July 1, \$1,800,000. Seven tobacco warehouses, four stemmeries and rehandling houses, branch factories of two of the largest tobacco companies in the world; wagon factory, lawn swing factory, three cigar factories, and one canning factory.

We have a handsome opera house and a brick tabernacle for large gatherings, seating 5,000 people.

Hopkinsville has water works, gas works, electric lights and an automatic alarm system, the best in the State. The waterworks for fire, by pressure, throws two streams 100 feet. We have also a wagon, two ice, brick, and lime factories, large planing mill, four merchant flouring mills turning out 2,000 barrels a day, a steam laundry and dye works and two telephone exchanges.

The dry goods and grocery trade amounts to \$250,000 annually.

The city is famous for culture, good order and healthfulness. New manufactories are free from city taxes for five years. There are over twenty miles of excellent macadamized streets, 110 miles of free turnpikes, extending into fine farming sections, and at least eight miles of sewerage system.

The hotels are excellent and unsurpassed anywhere in the State. We have prosperous home building and loan associations, six newspapers and the handsomest business houses in Western Kentucky.

Western Asylum for the Insane, with a population of 1,300, is located within one mile of the city and spends \$150,000 annually.

A belt line railway has just been completed through the manufacturing district.

LEXINGTON.

(Revised 1907 by Thomas A. Combs, Mayor.)

The city of Lexington is situated in the richest agricultural portion of Kentucky, and one of the richest agricultural sections of the United States. The peculiar geological formation secures to the counties known as "Blue Grass" counties perpetual fertility of soil, and the healthfulness of the climate makes it uncommonly suitable for the breeding of all stock adapted to temperate climate, and to all crops suitable for such climate.

Turnpikes—It is the center of a very fine system of macadam turnpikes. From it as a center radiate these excellent roads to every part of the adjacent and surrounding counties. Lexington bears the same relation to these counties that the hub of a wheel does to the spokes and circumference. The aggregate population of Fayette county, the counties adjoining and the counties tributary to Lexington is now over two hundred thousand. These turnpikes have recently been made free, and the heavy tax collected heretofore in the form of tolls removed from the trade of Lexington. These tolls were burden upon her trade, and amounted in many instances to a prohibitory tariff, especially as to her retail trade. The growth of Lexington in the last few years shows the very large advantage which has accrued to her by taking from these roads their toll gates. There are fifteen turnpikes leading into Lex-

ington, and from these are built quite a number of branch turnpikes. These turnpikes connect Lexington with Richmond, Winchester, Mt. Sterling, Paris, Georgetown, Midway, Versailles, Frankfort, Lawrenceburg, Shakertown, Harrodsburg, Nicholasville, Danville, and from each of these towns are turnpikes which run to other equally flourishing shire towns. All of these turnpikes traverse the richest agricultural country populated by an unusually intelligent, prosperous and solvent community.

Railroad Center—Lexington is also a railroad center. The systems known as the Chesapeake & Ohio, the Louisville & Nashville, and the Southern confront each other in this city. To Lexington are railroads from the Eastern seaboard, Baltimore, Washington, Newport News, by the Chesapeake & Ohio. From Philadelphia and New York and the entire East by way of Cincinnati, by the Kentucky Central and Queen & Crescent. The Louisville & Nashville, by its connections at Cincinnati and Louisville, gives to Lexington an advantage of unsurpassed railroad connections with the entire South and West and Southwest. and the Southern system connects here with Southwest, Tennessee, Alabama, Mississippi, Louisiana and the Trans-Mississippi. These various roads and the Lexington & Eastern, which is completed to Jackson, Breathitt county, pass through the richest coal fields west of the Allegheny mountains, and secure for Lexington an abundant and unfailing supply for domestic and manufacturing purposes. They also secure for our merchants reasonable freight rates at least as low as those enjoyed by Cincinnati and Louisville. Cheap fuel and cheap rates are the foundations upon which prosperity of an interior city must be built, without them there can be no hope of successful competition.

Capital—Lexington has abundance of capital. The Fayette National Bank, the City National Bank, The First National Bank, the Second National Bank, the Third National Bank, the Phoenix National Bank and the Lexington Banking and Trust Company are all solvent banks with abundance of capital and under progressive and intelligent management. The Security Trust Company, one of the most substantial financial institutions of the city, does a general banking business as well as acts in all fiduciary matters. The Union Bank and Trust Company has been organized with bright

prospects of success. The private capital under the control of the city of Lexington, added to the bank capital, is abundant for any enterprise which promises profitable results.

Manufactories—Although Lexington was originally a most enterprising pioneer in all industrial movements, the want of transportation, the enormous freights and the high price of fuel, which for many years handicapped her, destroyed all her manufactories except those based on hemp. The manufacture of hemp was the foundation upon which was built most of the largest fortunes made in Lexington from 1790 to 1860. During the year 1859 the State of Kentucky raised 49,000 tons of hemp, most of which was manufactured in the blue grass section and sold in the shape of bagging and rope. The emancipation of the colored people, the change in the method of manufacturing fibers, and other changes, have resulted in the reduction of the production of hemp in Kentucky to probably less, on an average, than 5,000 tons. It follows necessarily that the manufacture of hemp ceased. In the blue grass the Burley tobacco has gradually been substituted as the money crop in place of hemp. The American Tobacco Company has made Lexington the headquarters of their country leaf department, and the Burley Loose Tobacco Warehouse Company has recently built a large warehouse for the sale of tobacco in the leaf. The Blue Grass Tobacco Company has a large plant for the manufacture of twist and plug tobacco. Lexington offers splendid opportunities for the establishment of factories for the manufacture of cigars and tobacco, which opportunities should be taken advantage of by manufacturers of this State. We predict that before a decade is passed Lexington will be as celebrated for her tobacco factories as she was formerly for her hemp factories.

A large stemmery, which employs from fifty to one hundred hands, has been erected upon ground adjacent to the American Tobacco Company's warehouse. There has also been erected within the past year the Petty stemmery and the Shelbourne & Son tobacco warehouses. This further increases the importance of Lexington as a tobacco center.

While no very large factories have been built in Lexington, a number of enterprises have been attempted and are in successful operation. This is particularly true recently of lumber companies, of which several are now successfully operated here. We may state

Seventeenth Biennial Report Bureau of Agriculture. '67

as a general observation that every enterprise of which skilled men have been in control has been fairly successful. And this is to be expected, because Lexington now has abundance of water, electric lights, electric cars, abundance of capital, cheap freight and cheap fuel. Its climate is healthful during the whole year; in its markets are always to be found wholesome food at reasonable prices.

There is however, a large population in this city and its suburbs which could be utilized in many forms of labor at very cheap rates, and there is no place known to us where so many advantages unite for the successful operation of such enterprises.

The value of property assessed for taxation is \$22,800,000.00, and the tax rate is \$1.70 on the \$100.00 valuation.

Distilleries—These deserve a special mention. Situated in the outskirts are the distilleries from which are manufactured the whiskies known as "Old Tarr," "Old Elk," "Ashland," "Pepper," and "Woodland." These brands are known all over America. When these distilleries are in operation their joint capacity is sufficient to require a daily payment to the Government of \$8,000.00 in taxes. They furnish employment and support to many persons and a market for a large amount of grain.

The Lexington Brewing Company, incorporated in October, 1897, has erected a large and handsome brewery, with a capacity of 15,000 barrels a year or more.

Educational—But the chief cause of the prosperity influence and reputation of Lexington during the 125 years of its existence has been its educational advantages, and these are unsurpassed by any city of its size in America. It is the seat of Kentucky University, the successor of Transylvania University and of the State Agricultural and Mechanical College. In each of these institutions, both of which are now open to women, the youth of Lexington and of Kentucky can obtain a collegiate education at a cost so low as to be practically nominal. The Sayre Female Institute, the Hamilton College, Campbell-Hagerman College, St. Catherine's Academy, and other private schools furnish equally suitable educational advantages for girls. The system of public schools is equal to that of any city of the same size, and under it the children of both races are given the fullest opportunity for the best common school education. Lexington owes her reputation and power to these institu-

tions of learning, and they have attracted, and continue to attract, many persons to settle in the city so that their children may have the benefit of these advantages. And to these colleges, female seminaries, private schools and public schools ought to be added mention of the commercial and business colleges which have been a prominent feature of the educational advantages of Lexington. Among the first business and commercial colleges established in Kentucky was the one established in Lexington, and there have always been, and are now, several of the most flourishing of these colleges here, with large patronage, not only from Kentucky, but from the Southern and Western States.

Street Railways—Lexington has now one of the most complete and effective systems of street railway service in the country. It has about fifteen miles of splendid track and is a subject of flattering comment with visitors. At present there is being constructed a system of interurban roads which are designed to connect Lexington with all the neighboring towns. The lines to Georgetown, Paris and Versailles have been in operation for some time and have shown conclusively that these roads will be profitable. A line is now being built from Frankfort to Versailles, which will connect with the Lexington-Versailles line. This road will be in operation in a few months. A solvent corporation, with ample capital, has acquired the franchise and proposes to construct similar electric lines to Nicholasville, Winchester and Richmond. This prospect will be realized in the near future, and it seems certain that the growing communities of the contiguous counties and towns shall soon be united with Lexington by means of such electric railways.

Some years ago the City Council entered upon the reconstruction of the streets in the central portion of the city, and constructed them with brick, and two years ago several blocks were laid with creosote wood blocks so that now the streets of the city are in excellent condition.

The boundaries of Lexington were not changed from the time of its incorporation as a city until September, 1906. By an act of the General Assembly of 1906 the city was enabled to extend her limits, and several populous outlying districts were added to the city. The new Lexington has not less than 35,000 people within her borders.

The public buildings of Lexington are handsome. The United States building, used as a postoffice and offices for the Collector of Internal Revenue, is a stone building of handsome architectural style, but the business of the department has outgrown the building and the Government will soon be compelled to make an addition to this building. Through the generosity of Mr. Andrew Carnegie, Lexington has secured a very handsome public library building, which, under the conditions of the Carnegie gift, has ample funds at its disposal for making it the finest library in the State. The new court house, which sits upon the old square in the center of the city, is a still more imposing building. The two colleges have numerous and suitable edifices for their various purposes. The new union station, which is being built by the Chesapeake & Ohio, the Louisville & Nashville and the Lexington & Eastern Railroad Companies, is rapidly nearing completion, and is beyond doubt the handsomest depot of its size in the United States.

Charitable Institutions—Very early charity took a practical form in Lexington, and her citizens erected as a private enterprise the first lunatic asylum west of the Allegheny Mountains. It is now one of the largest asylums in the country. It is situated in the northwestern portion of the city, the State owning it, and having purchased some 300 acres of land and erected buildings costing many thousands of dollars. The asylum is a community in itself of perhaps 1,500 souls. The Odd Fellows of Kentucky have established here their Widows' and Orphans' Home and purchased the commodious and handsome residence of the late Robert McMichael. The Knights of Pythias of the State have recently bought the large residence and farm of Richardson T. Gibson, near the city, and made it the seat of their Widows' and Orphans' Home. One of the sad results of the terrific ravages of the cholera in 1833 was the large number of helpless orphans, and some of the charitable ladies of the city, with the aid of their husbands, founded the Lexington Orphan Asylum, and from time to time, as necessity demanded, other charitable institutions have been founded, and we presume that to-day there is not a city of its size where charities are more numerous or more wisely managed than in Lexington. The Houses of Reform, established by the State, have been located near this city and are admirably managed.

Postal Service—The postal service of Lexington and Fayette

Fayette county is good. There are ten rural routes operated from the Lexington office. In addition there are twelve postoffices in Fayette county, outside the City of Lexington, as follows: Athens, Brighton, Chilesburg, Donerail, Greendale, Muir, Avon, Montrose, Yarnallton, Elkchester, Cleveland and East Hickman.

Lexington and Fayette county are included in the Fifth Appellate District and the Seventh (Ashland) Congressional District. Fayette county constitutes the Twenty-Second Judicial District and the Twenty-Seventh Senatorial District. The County of Fayette outside the City of Lexington comprises the Sixty-first Legislative District while the City of Lexington comprises the Sixty-second Legislative District.

Though her advantages are thus meagerly outlined, the future of Lexington is most promising. Situated in the heart of a country lumber and staves.

so fertile and so solvent, with a climate so salubrious, with a system of free turnpikes, with ample railroad facilities and interurban lines, with cheap fuel and cheap freight, with such educational advantages, with abundant capital, there is no city of its size known to us which offers so many inducements for enterprising men of fair capital to invest their capital, provided they invest themselves with their capital; men who are skilled in any form of industrial work and who have sufficient capital to found any factory can find no place with more, if as many advantages as is possessed by Lexington.

LUDLOW.

(Revised 1907 by H. P. Brown, Mayor.)

The city of Ludlow is located in the northern part of Kenton county, on the south side of the Ohio river, and is just below Covington and opposite to the western portion of the city of Cincinnati, Ohio. Ludlow became a city by act of the Legislature on February 9, 1864, thereby making it forty-two years old.

Ludlow has access to Cincinnati via the C. N. O. & T. P. Ry. Co's bridge at Ludlow, both by footway and trains, and also via the S.

C. & C. St. Ry. Co.'s electric trolley cars, which pass through Covington and over the suspension bridge.

This city has a complete system of water supply from which a first-class quality of water is obtained for all purposes; the pressure is from 100 to 120 pounds to the square inch and it therefore has a fine fire protection.

The city is lighted with electricity, and this is the kind of lighting in use in a great many of the stores, factories and private residences.

This city has first-class schools, which cover instruction from the primary department up to a full four years' high school course.

The principal shops are: C. N. O. & T. Railway Company, repairs to cars and engines; The Pullman Company, repairs to sleeping cars; the Ludlow Manufacturing Company, all kinds of sheet metal ware; R. B. Carran, brass castings and all kinds of foundry supplies; The A. J. Smith Sand Co., capacity 15 cars daily; Independent Coal Co.; Pittsburg Coal Co.; Ideal Cement Brick Co., and Southern Bung Mfg. Co., Wood Bungs.

We have installed free mail delivery, have recently granted franchise for natural gas, which will be installed within the next sixty days.

The rate of taxation compares very favorably with other cities of this size in the State, it varying from \$1.20 to \$1.25 per \$100 valuation, which includes levy for schools and all other purposes.

MAYSVILLE.

(Revised 1907 by J. M. Collins.)

Maysville, the metropolis of Mason and its adjoining counties, is delightfully situated on the Ohio River some sixty odd miles northwardly from Lexington and about the same distance eastwardly from Cincinnati. Standing on a plain at a great bend in the stream it is surrounded on the south by a range of hills which rise undulating to a height of several hundred feet as they recede from the river, and which throw about the otherwise beautiful and placid scenery a romanticism and picturesqueness of surpassing beauty, making Maysville—or as it was called in pioneer days, Limestone—

an inviting entrance to the broad and fertile agricultural territory which extends to the south.

Maysville is and always has been, and by reason of her location and other material and logical advantages always will be, the moral, social and commercial center of a rich and prosperous territory. She has never sought nor delighted in that tin horn prosperity which typifies the boom town, but has grown steadily and substantially with the progress of the age and development of the country. Her population of ten thousand including suburbs, although in a sense cosmopolitan, is independent, cultured, sturdy, energetic and thrifty, and while not insensible to the progress and commercialism of the times, has not neglected the cultivation of the finer and more liberal pursuits which broaden the social and benevolent sympathies and make for all that is best in life.

Possessed of a Public Library, good schools and numerous churches of almost every denomination, the culture and moral tone of her people are as high as can be found anywhere, while in material progress she has kept abreast of the times as is attested by her compact and substantial blocks of spacious business houses and commodious and comfortable as well as artistic homes.

She is equipped with all modern public utilities such as electric street railroad, electric lights, artificial gas, water works, telegraph, telephone (both local and long distance), and her vitrified brick streets, modern system of sewerage and the fact that her 4% city bonds are eagerly sought after at a handsome premium, bespeak an active, energetic and efficient administration of city affairs and a public confidence which shows that the word "graft" in its modern acception is not found in her municipal vocabulary.

In the matter of public and quasi-public improvements, there has just been completed a new and attractive Government Post Office building, and there are now in course of construction a splendid public school building of collegiate pretensions, a magnificent Catholic Church of cathedral proportions and a handsome modern six-story bank and office building, besides many private structures, though less pretentious, of like character.

Mason county, rich and prosperous with its numerous rural mail delivery routes and local telephone system reaching every part of the county and more than three hundred miles of excellent

macadamized turnpikes, has its Court House and other public buildings in Maysville, the county seat.

Maysville is represented in her manufacturing and commercial interests by five banks with some two million dollars of deposits, a large plow factory, cotton mills, foundry, pulley works, harness company, lumber mills, tobacco warehouses, distilleries and many active and progressive wholesale dealers in grain, groceries, provisions, liquors and other staple commodities.

Few cities can offer a more alluring location to the prospective manufacturer. In the great Chesapeake & Ohio and Louisville & Nashville railroad systems and the Ohio river, which is navigable at this point practically all the year round, she has unsurpassed transportation facilities for the procuring of raw material and the shipment of the finished product. Taxes are low and fuel cheap and readily obtained by reason of the river. Besides there is in early anticipation an inexhaustible supply of natural gas. Possessing all the metropolitan advantages of the larger cities and almost an entire absence of labor agitations which unfortunately so often result disastrously as to both capital and labor, Maysville is deserving of serious consideration by any manufacturer seeking a location.

MIDDLESBOROUGH.

(Revised 1907 by E. S. Helburn.)

Middlesborough, called the Marvelous City, is situated in southeastern Kentucky, at the point where the historic Cumberland Gap divides the Cumberland mountains and affords the only passage between the states of Kentucky, Virginia and Tennessee to be found for hundreds of miles along this rugged range.

The city is an outgrowth of that phenomenal period of development which began about 1889, and continued until the panic of 1893 put a stop to further development for a period of several years. The city increased in population at a marvelous rate and at one time had a population of over 8,000. At present its population is about 6,000 and growing at a steady rate. It is the location of a number of factories, all of which have survived the panic and

are now on a firm basis for future growth and development. Among the number are the U. S. Leather Co.'s large tannery employing hundreds of men and furnishing a market for the abundant supply of tan bark contained in the surrounding forests; the New South Brewery, which has a large trade for its product; two foundries and machine shops; two iron mills and one immense steel plant. It is developing into quite a wholesale center.

The country represents all the advantages to be had in the way of cheap raw materials. The mountains surrounding are underlaid with richest veins of coal and iron, while the forests abound in timber of all varieties and grades found in this latitude. The facilities, therefore, for furniture factories, or other classes of wood-working establishments as well as those using iron and steel, are unexcelled. Every inducement in the way of free sites, exemptions, from taxation for five years, cheap water and coal, are offered to factories locating here and with the general revival in business which is being felt, a wonderful development of these resources may confidently be expected.

We have thirty coal mines in active operation within eight miles of the city and the city is more prosperous at present than it has ever been in its past history. In the last year two hundred houses have been built.

The L. & N. railroad runs through the city, and, connecting at Norton, Va., with the Norfolk & Western, furnishes direct outlet to the coast. The city has an outlet by the Southern system to Knoxville, Tenn., and the South.

An electric railway furnishes transportation to all points in the city and to places of interest adjacent.

The city is well lighted by a system of arc and incandescent lights.

The water supply is obtained from an immense reservoir constructed in one of the mountain gorges, elevated so that the natural fall furnishes sufficient pressure for fire extinguishing purposes.

The educational facilities are ample. The public school system comprises high school, two ward schools and a primary school. In addition to this is the Middlesborough University.

Two magnificent school houses have been built in the last year that cost about \$50,000. We are building splendid streets and magnificent side walks and beautifying the city in many ways.

The city has an elegant city hall for the transaction of municipal business. All denominations are represented here by churches and their influence is making itself felt on the morals of the city.

MT. STERLING.

(Revised 1907 by the Mayor.)

Mt. Sterling, the county seat of Montgomery county, is the principal town in East Central Kentucky. It has been aptly called the "Gate City," since it is the natural outlet from the bluegrass into the mountains east of it.

Settled in 1792, the town was originally called "Little Mountain," so named from the immense relic of the Mound Builders which stood within the limits of the town. The famous "Battle of Little Mountain," or "Estill's defeat," as it is sometimes called, a memorable conflict of the Indian wars, was fought within a mile of where the town now stands.

Mt. Sterling is situated on the C. & O. railroad, thirty-three miles east of Lexington, in the midst of the best farming and grazing section of the far-famed bluegrass. It is the distributing point for a great number of counties forming a large section of the country to the east of it, and is the natural receptacle of the business of that district.

The town has a splendid equipment of schools both public and private, the standard of intelligence among the citizens demanding a high order of teaching talent among those entrusted with the education of the youth. There are ten churches: a Baptist, a Presbyterian, a Christian, an Episcopalian, a Methodist and a Catholic, with four colored churches. Three newspapers, the Advocate (weekly), Gazette (weekly), and the Sentinel-Democrat (weekly), are published in the place.

The town has machine shops, flouring mills, planing mills, tobacco manufactory, tobacco rehandling houses, ice plants, etc., etc. Four ably conducted banks, one State and three Nationals, furnish ample banking facilities. The city owns two splendid fire engines, with a first-class hook and ladder equipment and has an excellent company to manage its apparatus with an extensive system of cis-

terns, well located, to supply water in case of fire. The city has twelve and one half miles of paved streets.

Mt. Sterling is the best cattle market in Kentucky. Her stock sales on county court days surpass that of any other town of whatsoever size in the State. In the palmy days of Short Horns there was more fine bred cattle, of the several fancy strains within a radius of a few miles of Mt. Sterling than in the same area elsewhere in the world. These strains have been carefully looked after by several of our dealers during the years of depression in the trade, and within a recent date this care is being repaid, in part, by some very satisfactory sales of pure Bates and other fancy strains.

Fine saddle horses as well as topky roadsters have always had a fascination for her horsemen, and today, as in the past, the highest price realized for fine saddlers have been secured by some of her dealers.

Grain, tobacco, lumber, flour, fancy horses, export cattle, mules hogs and sheep are her principal shipments. Three wholesale grocery houses furnish a large part of the goods consumed in their line to the merchants in the thirty-seven counties to the east and southeast of us. Montgomery county is second in Kentucky in export cattle.

To the east of Mt. Sterling and within easy reach lie great quantities of the finest of both hard and soft woods native in Kentucky. Manufacturers that use such woods can find ample encouragement in the way of substantial inducements to locate in the city. Toing, as a location for their plants, since the shipment of white Burley from Mt. Sterling exceed by far the shipment of the same tobacco manufacturers would find it a point well worth investigation from any other point in the State.

Altogether for general thrift, push, intelligence, health and all those things that go to make up a first-class town, Mt. Sterling will bear close comparison with the very best.

OWENSBORO.

(Revised 1907 by W. M. O'Bryan, Mayor.)

Owensboro, Kentucky, is a city whose location is ideal, being several feet above high-water mark on the Ohio river, 160 miles West of Louisville by water, forty-five miles East of Evansville, and is the largest city between these two points. The population is about 22,000. The city has an awakened southland at its door, an aggressive north on its borders, splendid railroad facilities Northeast, Northwest and South and surveys completed and plans drawn for a bridge to span the Ohio river near the city which means a direct railway line from Indianapolis through Owensboro to Nashville. There will soon be an interurban traction railway to Calhoun and other Kentucky towns. Local boats ply daily between the city and adjacent points and large steamers run by the city weekly from Cincinnati to Memphis and New Orleans. The Louisville and Evansville Mail Line boats go by daily. There are three railroads which, with the Owensboro City Railway Company, tap rich coal fields a few miles from the city, with cheap, but excellent, fuel for heating and steam purposes. The citizenship is alert at all times to the best interests of the city.

The City of Owensboro owns and operates its own electric light plant, water works, sprinkling and scavenger department. No city in the country is in a better sanitary condition.

Owensboro has a fine new union passenger station, nearly two miles of asphaltum streets, fifteen miles of macadamized streets, thirty miles of concrete pavement, twenty-one miles of sewers, one gas plant, one municipal electric light plant, four parks, one municipal and one private water works, twenty-three churches, one library, eleven banks and three trust companies, one hospital, two telephone exchanges, two telegraph companies, three express companies, four laundries, four buggy factories, three ice plants, one wheel factory, three wagon factories, four planing mills, four flouring mills, one tiling factory, one canning factory one shovel and tool factory, one sand-lime brick plant, one collar and harness factory, one dynamo motor and incandescent lamp factory, one school and church fur-

niture factory, one buggy body factory, one glass factory, one patent process tannery, one cellulose plant, eight hotels, two florists, four bakeries, two hose houses, two up-to-date daily papers and several weekly papers, six job printing plants, and an armory building under construction. Educationally the city has the Owensboro Female College, Columbian College, St. Francis Academy, Daviess County Business College, seven public school buildings and several private schools. There are here twenty-two tobacco stemmeries putting out about thirty million pounds of tobacco yearly. Three iron foundries, two theatres, one large auditorium, seven distilleries, one street car company, and the seven hills chatauqua that is famous far and near. One fine three story Y. M. C. A. Building one government building used as a post-office and custom house and in which the United States Court is held semi-annually, but the government needs have outgrown its capacity and the last Congress appropriated \$175,000 for another building, the site for which has already been selected. The B. P. O. Elks' have in the past year completed a very handsome three-story "Elks' Home."

The city government has been independent of partisan politics for several years and is progressive and economical. The fire and police departments are well organized and in excellent condition. The city has many other features that make it a desirable place for pleasant residence and safe investment.

PADUCAH.

Revised 1907 by the Mayor.)

Paducah, Kentucky, the Queen City of the Purchase, is located in almost the extreme western part of the State and in the heart of the great Mississippi Valley. It is situated upon the Ohio and Tennessee rivers, just twelve miles below the mouth of the Cumberland and fifty miles from the Mississippi. Paducah is 226 miles from Louisville, 165 miles from St. Louis and 167 miles from Memphis and is the largest city between these points. With these cities, and in fact with all points from Pittsburg and St. Louis to the Gulf, Paducah has water connection as well as by rail. These comprehensive river and railroad facilities make good Paducah's claim

to be the future leading gateway to the great South and Southwest.

The origin of the name "Paducah" is surrounded in romantic mystery. But the theory most popularly accepted is that in the older time an Indian chief found his last resting place on the banks of the Tennessee near a portion of the city now known as Jersey. Whether the legend be true the average Paduchan will not willingly surrender the romance; and further the belief is cherished that the old warrior died not with curses on his lips, but he was rather a friend to the white man who has chosen to perpetuate his name.

The first house in Paducah was erected in April, 1821; the city was platted in 1827 and incorporated in 1830. The strategic value of the city's location was recognized at once and Paducah quickly became a most important distributing point and the center of an immense commercial activity. One of the remarkable points of Paducah's development is the fact that the city has always had a commercial importance far out of proportion to its size. The old citizen fondly recalls the golden age of steamboating when from Pittsburg to the Gulf no city of the size did one-third as much business as Paducah. Cotton, tobacco, wheat and corn were marketed here in enormous quantities. Paducah's manufacturing interests also early attained great importance and long before the war were second also only to her vast river trade.

If there is one thing in which Paducah excels and in which the city has no close competition, it is freight rates. Whether to the north or south, the east or the west, freight schedules are in her favor. This is because, in addition to her splendid railroad facilities, Paducah has four great rivers—the Ohio, the Tennessee, the Cumberland and the Mississippi—which seem to have selected their courses with the single view of making Paducah an unrivalled commercial center. The vast benefits of far-reaching waterways are seen to the greatest advantage in the transportation of raw materials and heavy manufactured articles and in regulating freight rates. The river route to New Orleans gives Paducah splendid exporting facilities and as a point from which to reach the trade of our new West Indian colonies, Cuba and Porto Rico, Paducah is unsurpassed.

Paducah's railroad facilities are furnished by the Illinois Central railroad, the Nashville, Chattanooga & St. Louis railroad and the Louisville & Nashville railroad, which is closely in touch with the N. C. & St. L. railroad.

680 *Seventeenth Biennial Report Bureau of Agriculture.*

Paducah's population is estimated to be over 30,000. In 1880 the population was 8,036; 13,024 in 1890, and is still increasing at a very rapid rate.

The city has twenty-three churches, representing all the leading denominations, and some of the church buildings are the most beautiful to be found in the State.

The public school system is one of the best in the South. There are eight public schools, one private academy, one kindergarten, one parochial school and one business college and night schools. The high school building has just been completed at a cost of \$75,000, and is in every respect a model city school structure. The faculty numbers forty-three white teachers and thirteen colored.

The electric street car system is first-class and well equipped, operating fourteen miles of track inside the city limits. The street car line connects with a beautiful suburban park just outside the city limits, where a first-class summer theater is conducted every season.

The city is also supplied with a modern electric lighting system, gas system and water system. All these are comprehensive and up to date.

Paducah has long been noted for the beauty of her streets. These streets have been made of cement gravel, with a few squares of brick. There is now a strong sentiment in favor of paved streets and this is likely to be Paducah's next great municipal improvement. Broadway is now paved from First street to Ninth street with cement sidewalks. A sewerage system covering a large part of the city has just been completed.

The city has five banks with an aggregate capital of over one million dollars.

The municipal government is that of the cities of the second class. The fire department is thoroughly equipped and one of which the city is very proud. The members are all veterans, and the department is supplied with all the modern appliances. The efficiency of this department is attested by the remarkably low rates of insurance that the city enjoys.

Paducah has a very fine government building in which is located the postoffice and all the various offices of the United States Court. The growth of the city has been so rapid that the Government is now enlarging the postoffice to double its size. The city also has a handsome and commodious city hall. The county court house is

also in the city and is a very handsome structure. "The Kentucky;" a new opera house, is the finest one in the South.

Two telephone, two telegraph and three express companies supply the wants of the city in their various lines.

A \$35,000 public library building is just completed and opened to the public.

The hotel facilities are of the best. There are four newspapers, a well conducted private infirmary and in fact all the other organizations that go to supply the wants of a progressive city.

Paducah is essentially a manufacturing and wholesale town. In commercial importance she is second only to Louisville in this State. Indeed, Paducah is said to be the best wholesale city of its size in this country. The leading wholesale lines are groceries, whiskies and hardware. In addition, there is a large wholesale queensware house, two wholesale druggists, one clothing and one wholesale hat houses. There are nine wholesale grocery houses and five wholesale whiskey houses. An idea of the business of the city in the wholesale line can be gotten from the fact that nearly 300 traveling men represent Paducah houses alone.

The distinctively manufacturing business of the city is represented by forty firms. The leading manufactured articles are cotton rope, tobacco, staves and heading, veneering, lumber, jugs and stoneware, furniture, saddles and harness, singletrees, spokes and rims, vinegar, cigars, pianos, proprietary medicines, trunks chewing gum, brick and tile, canned goods, flour, wagons, brooms, molasses, shirts and pants, etc. These manufacturing plants have a monthly pay-roll of nearly \$60,000 and employ nearly 1,900 operatives.

The railroad and river interests of Paducah are most important and contribute most largely to the city's prosperity. The Illinois Central shops employ nearly 600 people and the pay-roll of that railroad in Paducah for its shops and its other employees who live here is the terminus of the Nashville, is \$70,000 a month. In addition, the Chattanooga & St. Louis railroad and their pay-roll is a considerable sum. The monthly pay-roll of the various river interests is \$30,000. This includes the marine ways and the dry docks which do a vast amount of business. The Cairo & N. W. railroad is completed and now being operated by the I. C. company.

Paducah is also a large tobacco market. From 16,000 to 24,000

682 *Seventeenth Biennial Report Bureau of Agriculture.*

hogsheads of tobacco are sold annually on the breaks by the four warehouses. There are also two stemmeries which handle a large amount of tobacco.

There are two ice plants which have a capacity of 150 tons of ice per day. In addition to lumber and tobacco, Paducah is also a large market for poultry and live stock, wheat, corn, fruits and vegetables. The city's daily market is one of the finest in the South and makes living here very cheap.

Paducah is rich in raw materials for manufacturing, chief among which are cotton, coal and iron, hardwood, fire and potter's clay and tobacco. These raw materials make this city a most desirable location for the manufacture of buggies, wagons, furniture and all kinds of tools and farming implements, tobacco, cotton, woolen and knit goods, all clay products and all iron products.

Paducah has a well organized and progressive commercial association which will take pleasure in answering all questions about the city and which is devoted to the upbuilding of the city. Investors and home seekers looking for a location will find that Paducah offers great advantages and many attractive inducements. Nature has given the city a beautiful and healthy location; the city's rivers and railroads guarantee low freight rates and unsurpassed transportation facilities. Raw materials abound, fuel is cheap and manufacturing sites and land for homes are very reasonable. In fact, it is believed that Paducah is the ideal place for manufacturing industries and offers to a large degree those attractions that makes life a pleasure.

PINEVILLE.

(Revised 1907 by David Hawn, Mayor.)

Pineville is the county seat of Bell county, is on the Cumberland river, thirty miles below the forks at Harlan and fourteen miles from the Tennessee state line at Cumberland Gap. The city is compassed about by mountains ranging from 950 to 1,200 feet high and occupies a valley of three hundred acres which lies just below and up to the Narrows, famous for being the only waterway through the Pine mountain. The picturesque Cumberland river flows

through this gap and has a fall that could be utilized commercially with great profit, if our other natural resources were not so abundant.

Pineville has a population of 2,500 and there are mining and lumbering towns and camps within a radius of two miles, whose aggregate population is 2,000. The Louisville & Nashville Railroad runs through the city, and has branches and spurs up the many creeks that empty into the river at and near Pineville. On each of these tributaries of the Cumberland there are numerous coal mining operations and many more are projected.

Pineville has well constructed sewerage, an automatic system of water works, three miles of macadam streets and brick side-walks lighted by electricity, a graded school with a kinder-garten, high school and all intermediate departments, each of which is in charge of experienced and highly efficient teachers, and is maintained nine months in the year entirely by taxation.

There are three banking institutions in the city, one National and two State banks, with an aggregate deposit of \$250,000. The mercantile business is done by wide-awake men whose experience enables them to get the best in every line carried and to satisfy their customers in quality, prices and terms of payment.

The beautiful mountain scenery, healthful atmosphere, ideal climate and the attractions to capitalists, have made Pineville a veritable resort the year round, since the construction of the L. & N. in 1888. As a result the hotel accommodations have been improved and modernized until no city in the State of three times the size can boast of superior hostelries.

Pineville is in the center of a rich coal territory and of a larger area than can be found elsewhere in the State where there has been any development. There are twenty large coal operations in the vicinity of Pineville, mining and shipping the Straight Creek, Log Mountain, Four Mile and Jellico coal; each of which is of a high quality for coking and domestic purposes.

The slopes of the mountains in every part of Bell county are covered with growing merchantable timber. The poplar and the ash have been removed but the white oak, chestnut oak, pine and hickory are still abundant far above all demand and the hickory is for the first time utilized, and that only in a very small way.

There are six passenger trains a day, three North and three South,

through Pineville over the L. & N. A telephone exchange in the city has connections with all the surrounding mountain towns, facilitating business with places where access by travel is most difficult.

PRINCETON.

(Revised 1907 by M. J. Groom.)

Princeton, the county seat of Caldwell county, for health, home and happiness, is one of the best cities in Kentucky. It is situated at the crossing of the I. C. and the O. V. Railroads about an equal distance from Evansville, Ind. and Nashville, Tenn., and also a short distance from Paducah and Louisville. With these railroads under their present excellent management Princeton is in easy touch with the outside world. Her agricultural surroundings are equalled only by a few cities in Western Kentucky. On the South and West lie some of the most fertile and beautiful valleys in the State. Wheat, corn, tobacco and all the grasses grow in luxury. On the North lie her hills, with living water flowing freely, with mineral wells and springs to heal the sick and make the old feel young again.

Princeton schools are real schools of learning. Her college is one of the oldest in Western Kentucky, while her public school is recognized to be one of the best in the State, doing a most excellent work in preparing teachers for the public schools by making their education thorough in all grades.

With her many churches all may worship free. Her business men are liberal and prosperous in every line.

Princeton has lights, water and sewerage. The electric light plant is owned by a corporation, that gives such good service that dark nights are not known in Princeton. Her water plant is owned by the city, giving an abundance of water for all purposes and ample fire protection, while having been in operation less than two years, we feel sure that it has saved more than it cost in protection of property from loss by fire, and will in a very few years save in insurance premiums the cost of the plant. The direct pressure is used and the water supplied direct from wells.

Princeton has a cavern traversing it from Northwest to Southeast that makes a natural drainage for the city, this is now being used for sewerage and soon Princeton will have an excellent sewerage system at a very small cost.

The prosperity of Princeton is readily shown in the rapid increase in population and advancement in real estate. Only a few years ago the census showed only 2,700, while now we feel it will show 5,000 and within only a few years we will show a little city of 10,000. Real estate has advanced here within the last two years 25 to 50 per cent.

If you would live long and be happy, make your home in Princeton, Ky.

RICHMOND.

(Revised 1907 by C. E. Woods.)

Richmond, the county seat of Madison, is a city of the fourth class, of about 6,500 population, located in the midst of the most beautiful rolling and fertile portion of the bluegrass region of Kentucky, near the foothills of the Cumberland mountains, at an elevation of about 500 feet above the Ohio river.

In point of healthfulness, this locality is unsurpassed by any in the country. It is absolutely free from malaria, which complicates nearly every disease. In winter the climate is of that invigorating, bracing character, best adapted to secure the greatest mental and physical activity, while in summer the elevation insures cool nights, so indispensable to comfort and rest.

Richmond is situated on the main stem of the Kentucky Central railroad, from Cincinnati to Knoxville, and is in direct communication with the Louisville & Nashville railroad at Richmond Junction, near by, and with the Cincinnati Southern railroad at Nicholasville, via, the R. N., & B. R. R., which is completed to Beattyville 50 miles east.

The city has entering it seven lines of turnpike and three of dirt roads, all of which are free of toll.

Richmond has eight large and commodious brick churches rep-

686 *Seventeenth Biennial Report Bureau of Agriculture.*

representing the various denominations and a handsome frame Catholic church, together with two frame Protestant churches, and the colored people have four large churches, one brick.

Richmond cannot be excelled in the State for its educational advantages; in fact it has grown to be the educational center for Central Kentucky; the oldest institution dating away back of ante bellum days, is the Madison Female Institute, is now under successful operation as it has never been. The Caldwell High School, with its seventeen teachers, and the Colored High School with ten teachers, both large commodious brick buildings, with water and gas, free to the children of the respective color; a Catholic seminary for young ladies has been founded recently.

The city is lighted by both gas and electricity. The manufacturing plants consist of a large brick yard, two flouring mills, a tobacco factory and cigar factory; two steam laundries, and an ice factory, two carriage factories, and a marble works, two bottling works, a large barrel factory, three planing mills, together with the gas plant and electric power house. We also have a large stock yard, Richmond now being recognized as the best live stock market in Central Kentucky, aside from Mt. Sterling.

The Eastern Kentucky State Normal School is located on the old Central University grounds, and 600 pupils and others studying pedagogy are in attendance, on this, its second year.

We have a large amphitheater for fair purposes, and a one-mile race track, and several training stables for blooded horses.

We have three national banks and one State bank and trust company, aggregating a capital and surplus of over \$600,000.

The city is governed by a board of councilmen and a mayor. We have a splendid police force, and also fire department, which largely accounts for the low rate of fire insurance in this city, the water being available directly from the stand-pipe, which is located in the city, to all parts of it, under a heavy natural pressure, and the pressure can be increased as necessity may require at the pumping station, which is located outside of the city limits.

The city is well "hotelled," the Glyndon being one of the best hostleries in the State, outside of Louisville and Lexington; also the St. Charles, the Engle, Henderson, and Miller Houses, and Richmond Hotel.

We have a splendid telephone system largely patronized, with connections to Lexington and all other points.

The population of Richmond consists of a thrifty and moral people; nearly every citizen owns his own horse and cow, and cultivates his own garden and poultry.

The colored element constitutes a large percentage of the city's population, but is mostly colonized in one section of the town, the majority of whom own their homes and give the city no trouble as a class. Many are highly educated and stand for the moral and material progress of the city.

Richmond needs factories, a good creamery, a broom factory, a spoke, wheel and wagon factory, a pressed brick factory, a packing house, a cannery for all kinds of fruit and berries, a stoneware and tiling works, the clay being close at hand and the best in the world, so says the medal taken by it at two World's Fairs over all competitors, and all other manufactories which the promoters would be willing to undertake in Richmond with cheap transportation and close proximity to raw material, with the advantages above mentioned and five years' release from taxation, and a warm, hearty Richmond welcome and support.

RUSSELLVILLE.

(Revised 1907 by the Mayor.)

Russellville, called the "Knob City," is situated in Logan, one of the oldest counties in the State of Kentucky. Its second name was given it on account of the hills or knobs about the city which formed a natural fortification for its inhabitants during the Civil War.

The town is one of the oldest in the State, but its growth has been slow until recent years. It is noted for its schools, however, to-wit: Bethel College, and Logan Female College, the former of which is of long-standing and renowned for its out-put.

Only last year Russellville was placed in the class of Fourth Class cities, its census showing a population of 3,343, and since the adoption of the Graded School system and the voting out of the saloons under the County Unit law, there is a steady increase in numbers

who are coming to educate their children. There is not a vacant house in the city. The county is in the heart of the Dark Tobacco District, being the banner county this year in that product. Besides there are great quantities of rich asphaltum rock and petroleum which are attracting wide spread interest. The L. & N. Railroad, and the O. & N. Railroad run through this city, the shops of the latter being located here.

The city is well lighted by a system of arc and incandescent lights. There is also a splendid system of water works. The Court House is an elegant structure, costing about \$60,000.00. It was built in 1894. Nearly all the side walks and pavements are made of concrete. All denominations are represented here by churches and it is under their influence that the town is now rid of the whiskey traffic, to a large extent.

SOMERSET.

(Revised 1907 by E. H. Hansford.)

Somerset, the county seat of Pulaski county, is called in the State a mountain town, but compared with the really mountainous portions of Kentucky, it is only hilly. It is one of the cities, under the statutes, of the fourth class. Like many towns of the State located in the early days, the site was determined by a big spring, rather than the favorable lay of the land, and regardless of topography adapted for convenient and elegant streets. At least this one was so fixed that by any considerable expansion rugged ground must be encountered. The variations of contour, however, add charms to the views. When the Cincinnati railroad was built, the puzzle of getting a feasible line for it by Somerset, resulted in the depot for this place being located a mile south from town. Then followed a building up about the depot of an extensive addition. Hence, the village, then growing into a city, came to have two divisions—a new and old part—"North Somerset" and "South Somerset." The line of connection between the two centers—the court house the one and the depot the other—is a section of the old State road leading from Lexington, Ky., to Jacksboro, Tenn., and a branch from Somerset to Huntsville. The old and new towns are now con-

nected by a new resident addition recently opened up. During the past five years over 1,000 new houses have been built.

Somerset is now building for suburban population a city of about 9,500. We now have the Q. & C. machine shops employing several hundred men. The railroad's weekly pay roll now being (1,500 men) \$85,000.

We have an electric street railway and a company organized to build a steam road from Somerset to the Cumberland to give us river rates on freight and passengers.

We have a wholesale grocery and wholesale feed and grain house. Several miles of good pikes have been built leading out of Somerset.

Somerset has four newspapers, three strong banks, and several manufacturing plants.

We have built in the past three years about ten miles concrete sidewalks, and have about two more to build.

Our taxable property increased \$250,000 for 1907 over 1906.

We are entitled to free mail delivery and are now numbering our houses to get that benefit.

We have one R. F. D., which has proved very popular.

Our town is ready to welcome all good citizens and manufacturing establishments.

Somerset is a political and commercial representative and center of a wide extent of country, there being no considerable urban rival in a radius of twenty-five or thirty miles. It is the metropolis of an important territory fifty to a hundred miles across. It so stands for a peculiar region of country, border land to Kentucky and Tennessee, and in many respects the middle of the United States. Multiplied interests and varied natural resources characterize this territory. It includes among its hills and valleys many bodies of fertile land, if not always the richest yet possessing great varieties of soil with inexhaustible forests of timber; with minerals, coal mines, oil wells and water powers. The climate is temperate; the country is supplied with abounding springs and flowing streams of excellent water. Everywhere there are attractive sites for healthy homes.

Somerset is just at the head of steam navigation on the Cumberland river. It is half way between Cincinnati and Chattanooga, on the great trunk line, Cincinnati Southern, between the grand

systems of railroads to the north and south. Surrounding supplies of timber suggest manufactories in wood. Close by are fuel and heavy materials that come from the earth, ready to support various industries, and besides the fuel, near by are water falls converting portable power in electricity.

Now there comes into the city of Somerset daily streams of transportation on wagons, by at least three routes on which, if there were collected half the usual rate of toll on turnpikes, a fund sufficient to build macadamized roads on the same lines would be realized in six to ten years. This has been the case for the last twenty years, and will continue for decades to come. Yet the people of this country have in the past period expended half a million of dollars for imported wagons and worn them out on bad dirt roads and stony ways. Who will make these wanted and profitable improvements?

Socially, the city is full of churches; it has flourishing graded schools, with two elegant buildings; one of the largest court houses in the State; a fine Masonic Temple, a splendid Odd Fellows' building, a spacious chamber for the Knights of Pythias, and a magnificent opera hall.

VERSAILLES.

(Revised 1907 by Harry C. Taylor.)

Versailles, with a population of 3,500, in the heart of the famous Blue Grass section, is one of the oldest towns in the State, having been laid out in 1793, and its limits now include more than one square mile. The beauty and favor of its location, its modern and compact make-up, the hospitality and refinement of its people, have merited for it the just distinction of being one of the most attractive towns in Kentucky. Its business houses are all comparatively new and of modern design. The Cour House, Hotel, Masonic Temple and Odd Fellows' Hall are substantial in structure and attractive in architectural finish. The Woodford County hospital is soon to be rebuilt on a commodious plan, with every modern device for thorough sanitation and well-doing of the sick; while the Logan Helm Memorial Library, built at a cost of 30,000, would be attrac-

tive even in a large city. The building of the Young Mens' Christian Association, at a cost of \$15,000, together with its extensive gymnasium, is an imposing building. The plans for the Government building, to be erected in 1908, give assurance of being a praiseworthy addition to the town. The Public School building, on its high and beautiful location, is one of the most substantial and conveniently planned of all the public school buildings in the State. On its high elevation, with ample grounds, walks and shade trees, it presents an ideal appearance for educational purposes.

Rose Hill Academy for boys, and Ashland Seminary for girls afford educational advantages not to be found in many towns ten times as large.

The Blue Grass Creamery, with an out-put of 200 lbs. of butter per day, the immense rehandling house of the American Tobacco Company, the large grain elevators with a capacity of 200,000 bushels, and a storage capacity of 300,000, are all noteworthy features of the town.

Versailles has four banks, an active and influential Commercial Club, a Building and Loan Association in a highly thrifty condition, an electric lighting and power house, a large lumber and planing plant, and sufficient water works to support a well organized, thoroughly equipped fire department.

The large number of handsome residences and beautiful lawns, matted with blue grass, and tastefully ornamented with forest trees speak of the refinement and pride of the people. The streets are broad, with an abundance of shade trees, and the side walks, all made of concrete by City ordinance, are not to be equalled by any town in the State. This is one of the most noteworthy and conspicuous features of the town, and a brick side walk is a thing of the past in Versailles.

Versailles has splendid railroad facilities, being 2½ hours' run from Louisville, twenty minutes from Lexington, and one hour to Georgetown by the Southern Railway, connecting with the Queen & Crescent at Lexington and Georgetown. The Louisville & Atlantic Railroad from Versailles to Richmond, Beattyville and on to the coal and lumber fields of Eastern Kentucky, and an electric railroad to Lexington and Frankfort every hour make Versailles easy of access from all points.

These advantages, with its excellent geographical and topographical relations, its healthfulness and unsurpassed water supply, the great value and productiveness of Woodford County lands, its magnificent live stock equipment of thoroughbreds, trotters and high class saddle horses, its immense agricultural interests, the public spirit of its citizens and the culture and refinement of its people, place Versailles upon a high plane in the public estimate, and has all to satisfy the ambition and yearning of those who would seek to build, enjoy and cherish an "Old Kentucky Home."

WINCHESTER.

In the eastern portion of Kentucky's famous blue grass region, yet near the foothills of her great mountain section, is Winchester, one of the most attractive and promising cities of that State. It is the county seat of the rich agricultural County of Clark, yet through its close proximity to, and railroad connections with, the mountains, it is destined to become the commercial center of that vast storehouse of natural wealth, when the development which is now just budding is carried to full fruition.

Winchester is situated at the junction point of three distinct lines of railroad—the Chesapeake & Ohio, running east and west from Louisville to the Seaboard and the east; the Louisville & Nashville, running across the State north and south from Cincinnati to Knoxville, Atlanta and the South; and the Lexington & Eastern, which starts at Lexington, eighteen miles west of Winchester, and extends a hundred miles into the coal and timber region of South-eastern Kentucky. This last line runs southeast from Winchester bisecting the angle formed by the Chesapeake & Ohio and Louisville and Nashville, and will ultimately connect with the Norfolk & Western. All three of these railroads penetrate the mountain section, and converging at Winchester, which is the first town of importance on the Lexington & Eastern, and the largest upon the Chesapeake & Ohio and Louisville & Nashville in the territory reaching from the mountains to the point of convergence they make it the logical, as it is the actual, base of trade for that section, as well as the outlet for its enormous supplies of coal and timber. Hence its title—the Gateway City.

Winchester has grown more rapidly than any other city in Kentucky during the past five years, and the rate of growth is still increasing. In 1900 the population was 5,964. It is now over 9,000 within the corporate limits, with enough in the immediate suburbs, soon to taken in, to raise the total to about 10,000. Over half a million dollars was spent in new buildings last year. The new Union Station is one of the handsomest in Central and Eastern Kentucky. An appropriation has been made by the Federal Government for the erection of a public building, upon which work will begin as soon as the site is selected.

Among her public utilities, all of which are of high class and in excellent condition, may be mentioned the electric street railway, electric light power plant, natural gas for heat, light and power, splendid system of water-works, the independent and Bell telephones, and an exceptionally fine fire department. The traction line, connecting with the principal Blue Grass towns and cities, is to be constructed within the next year. In addition to the natural drainage, which is excellent, a sanitary sewerage system is to be put in at once, a bond issue of \$40,000.00 for this purpose having been authorized at the last election. It may be noted that with the exception of this debt, which has not yet been actually created, the city's entire indebtedness consists of only \$15,000.00—the cost of an additional school building recently constructed.

The streets are broad and well shaded, the stores are handsomely kept and the hotels are par excellence.

In the county surrounding there are more than two hundred miles of macadamized turn pikes leading to the county seat.

Winchester's educational advantages are of an unusually high order, consisting of an up-to-date system of public schools and the well known Kentucky Wesleyan College, the State institution of the Methodist Church, which is open to women as well as to men.

Her most prominent factory is the large plant for the manufacture of the celebrated Hagan gas engines. Among other manufactures are wooden boxes, spokes and hubs, hogsheads, artificial stone, brick, lunch baskets and novelties, carriages and buggies, and two large flouring mills, three planing mills, hemp factory, tobacco rehandling houses, grass seed cleaner and many smaller concerns. There are four banks with a million and a half deposits, four printing plants,

two newspapers, ten churches and free postal delivery in both the city and county.

Many causes have united in producing Winchester's growth and prosperity, and their continued existence furnishes the same inducements to other homeseekers.

To the external advantages already considered should be added the remarkable healthfulness of the place, due doubtless in some measure to its great altitude. It is situated on the ridge which divides the waters of the Kentucky and Licking rivers, and is one of the highest points in Central Kentucky.

Among the internal features which have played no small part in building it up are the high moral tone and the splendid public spirit which characterizes its citizenship. They are a sober, industrious, law-abiding, church-going people. The law is enforced, and courts and juries dispense justice without fear or favor. The public spirit is manifested in many ways, but notably in the liberality of its citizens. For example they contributed by voluntary subscription and wholly regardless of religious affiliations, over \$40,000.00 towards the building of the Kentucky Wesleyan College. The main building burned about two years ago. Twenty thousand dollars in addition to the insurance money, was needed to rebuild it. The amount, and nearly \$5,000.00 over, was raised by the people of Winchester and Clark county within thirty days.

Nor in their liberality confined to the giving of money. They are liberal-minded in their considerate regard for the opinions of each other, thus uniformly acquiring in their policies breadth of conception and harmony of action. In all public movements the most implacable political opponents, forgetting all differences, unite their wisdom, labor and means and stand as one man for the public good. The public spirit also runs to hospitality. Last year it entertained the Kentucky State Development Convention, the Methodist Conference and the Kentucky State Bar Association.

It is the legal domicile and headquarters of the Bewley Tobacco Society, which embraces fifty-two counties in Kentucky, Indiana, Ohio and West Virginia.

Winchester wishes more factories, more business enterprises of every kind and more good citizens. Taxes are very reasonable and the city has a standing offer of five years' exemption from tax-

ation for all manufacturing establishments locating there. This is the full limit allowed by the Constitution.

This place is admirably located for almost any manufacturing enterprise, its position at the intersection of the two great trunk lines—the C. & O. and L. & N.—insuring reasonable rates and prompt service to the four points of the compass. It is peculiarly well adapted for woodworking establishments of all kinds, including the manufacture of pulp paper, wood alcohol and other by-products. It is closer than any other Kentucky town of its size to an almost inexhaustible supply of timber and coal, which is tapped by all three of its railroads, though the timber comes principally from the Lexington & Eastern.

There are many of these wood-consuming industries in the Middle and Northern States which were located in or near the then timber regions of the country. The timber supplies, however, have now become exhausted. They must look to the South and pay heavy tribute in freights upon the raw material, or they must themselves come South. To such, Winchester offers exceptional inducements.

KENTUCKY.

A Brief Review of the Boundary, Area, Surface, Streams, Curiosities, Climate, Financial and Agricultural Wealth, Products, etc.

INTRODUCTION.*

Kentucky is a part of a very old land surface. Some time during that period of geological history when most of the coal of the world was formed, a slow upward movement began in this region, which, by the close of the coal period, had brought above sea level all that portion of the State lying east of the Tennessee river. This elevation was accompanied with the development of a broad, low fold or arch extending north and south through the present sites of Cincinnati and Lexington, and often spoke of as the "Cincinnati Arch." This arch was highest in that portion of the State now occupied by the central bluegrass counties of Bourbon, Scott, Woodford, Mercer, Boyle, Garrard, Jessamine and Fayette. The upward movement culminated here in the development of a "dome of uplift." The earth, as it were, "humped" itself in this region, and hence here first of all in the Ohio Valley raised its back above the sea and invited the atmospheric agencies to their work. This is why they have worn so much away from this region, causing to be exposed upon the summit of this old earth dome the oldest surface rocks in the State, and indeed in the Ohio valley—the limestone rocks which, by their disintegration, have furnished the deep rich soil the "bluegrass," ages afterwards, discovered and claimed pre-eminently as its own.

The different formation from the coal measures downward were worn through in succession and their margins retreated outward

*Adapted by Prof. A. Miller from his Chapter on Geography of Kentucky in the Natural Advanced Geography, copyrighted in 1908 by American Book Company.

from this region as a center in ever-widening concentric bands like the coats of an onion as it is pared away.

A result of this has been, in some cases at last, an increase in surface area of older formations at the expense of the newer. The coal measure area of Kentucky, for instance, has been steadily wasting away until from once having covered all or nearly all of the State, it has now been reduced to 15,133 square miles and cut into two fields, an Eastern and a Western.

In the long, long ages that have elapsed since Kentucky, east of the Tennessee river, became land, it has shared with the land occupied by neighboring States many vicissitudes of fortune; cycles of elevation and depression, increasing and diminishing the erosive power of the streams, have come and gone; atmospheric wasting has done its worst. The country has felt the influence of strong earth strains and thrusts along two of its borders, and to some extent in the interior. It has not entirely escaped the trial by fire, though this was never very severe, and evidence of it having been nearly all obliterated. Two small patches of "dike-rock" (rock formerly forced up into fissures in a melted condition)—the one in Elliott, the other in Crittenden county—alone to show that anything like volcanic activity was ever manifested in this region. Land ice, that great surface leveler, has scarcely left traces of occupation upon Kentucky soil. The Great Northern Ice Sheet, which for so long a time held the territory northward within its icy embrace, scarcely entered Kentucky at all. The southern limits of this continental glacier have been traced, skirting the Ohio river on its south side from Campbell county to Trimble. States like Ohio and Indiana have profited agriculturally by reason of this old ice invasion. Doubtless Kentucky as a whole would have been improved in like manner, if the ice had pushed further to the southeast, softening the country's rugged contours and making soil contributions from materials accumulated in its onward progress. But it might have ruined the bluegrass region.

BOUNDARIES AND AREA.

The present form and size of Kentucky is the result, partly of design, partly by accident. When separated from Fincastle county, Va., in 1776, the limits of "Kentucky County" were not very definitely fixed. The eastern, or county line, extending from Cumberland Gap

to mouth of Big Sandy, at first somewhat vaguely defined, was established as the State line in 1799. In that year, a joint commission convened at the forks of Sandy, and decided that starting at Cumberland Gap and following the crest of the water-shed between Powell's river and Poor Fork of the Cumberland and between Pound river and Elkhorn creek, tributaries of the Big Sandy to Russell Fork of the latter stream, it should thence proceed by straight line north, 45 degrees each, to the Tug Fork of Sandy, by thence down the middle of this stream to the forks and that of the combined streams to the mouth. It is said that a rain up the rivers the day before brought Tug Fork out with a greater flood than Levisa Fork, and hence the selection of the former as the main fork, though in reality it is the smaller stream. By this fortunate rain Kentucky acquired all the territory between the Tug and Levisa forks, in all some 2,000 square miles.

The north and northwest boundary, from the mouth of Sandy to the Mississippi, follows the low water on the right bank of the Ohio river, because in the act by which Virginia ceded the Northwest Territory to the general government in 1784, she still retained control of this portion of the Ohio river.

The western boundary, that from the mouth of the Ohio to the Tennessee line, originally established in 1763 in accordance with a treaty between France, Spain and England, is the oldest boundary legacy Kentucky has received. It follows the middle of the river Islands Nos. 1, 2, 3, 5 (Wolf Island) and 8 were by the act of 1820 given to Kentucky.

The southern boundary, that from Cumberland Gap to the Mississippi river, does not follow in unbroken course the straight east and west line originally intended. When Walker and Henderson were appointed by North Carolina and Virginia to run the boundary between the two States, they were directed to follow the parallel of 36 degrees and 30 minutes. Owing to the wilderness character of the country and the impossibility of making correction for magnetic variation in that early day, they veered to the northward of the true parallel and at Cumberland Gap, from which point Henderson returned, they were about seven miles north of this line. Walker continued the survey westward from this point and ended at the Tennessee river some twelve miles north of 36 degrees and 30 minutes. This line which, after some dispute, became the boundary between Ten-

nesee and Kentucky, is known as the "Walker line." By this error of a surveyor, Kentucky lost between 2,000 and 3,000 square miles of territory. Still, though the jurisdiction was given to Tennessee, the land in it was made subject to entry in the land office at Frankfort, and such entries are still (1899) occasionally made.

West of the Tennessee river the southern line was not established until 1819, when the Indian titles to this territory were extinguished by treaty—the Jackson-Shelby Treaty—and the best part of Kentucky lying west of this river has ever since been known as the Jackson Purchase. Determining the point on the Mississippi river where the parallel of 36 degrees and 30 minutes crossed, Alexander and Munsel, the two surveyors, ran the true line eastward to the Tennessee river. This is known as the "Munsel line." The Tennessee river forms the common boundary connecting the east extremity of the Munsel line and the west extremity of the Walker line. The islands in this course of the river, however, were given to the jurisdiction of Kentucky.

There are other minor eccentricities in the boundary line of Kentucky, the explanations of which are interesting contributions to local history as, for instance, the little jog in the northern line of Simpson county.

As a result of these boundary adjustments with their incident gains and losses to the territory of Kentucky, this State has now its characteristic westward tapering form and an area of 40,000 square miles, 400 of which is water.

PHYSICAL FEATURES (SURFACE).

Kentucky is divided into a number of well-marked physical regions, the direct expression of atmospheric erosion acting upon rock formations differing in hardness and other characters.

THE BLUEGRASS REGION, roughly described as lying north of a semicircular line drawn from Vanceburg to Louisville and passing through Junction City and containing 8,186 square miles, is the blue and gray limestone area, the soil of which has been formed by the decay of the underlying limestone and to some extent by inheritance from formations that were once above but have been removed by erosion. This soil is remarkably deep and rich, the richest being that formed from the upper part of the oldest forma-

tion in the State and indeed in the Ohio Valley—the Trenton formation, a highly phosphatic limestone, furnishing by decay just those ingredients the bluegrass needs in order to attain its greatest luxuriance and perfection of growth. This typical bluegrass region contains about 1,062 square miles and is included in the counties of Bourbon, Scott, Franklin, Woodford, Mercer, Boyle, Garrard, Jessamine and Fayette. The surface lying between 800 and 1,000 feet above the sea is gently rolling. It is pitted in some places by circular-shaped depressions or sinks, and small caves, and copiously-gushing springs are frequent. The lower part of the Trenton formation—the Birdseye limestone—forming picturesque cliffs along the Kentucky river from Boonesboro to Frankfort, furnishes, under the name of “Kentucky River Marble,” a good building stone.

THE KNOBS.—Bounding on the east, south and west of the region just described, is a strip of country diversified by conical-shaped sandstone hills rising to a height of 1,200 to 1,300 feet above the sea (300 to 400 feet above the surrounding country). These are detached outliers of a limestone capped-plateau lying further back. In the west the edge of this plateau presents towards the bluegrass a continuous bold front or escarpment, known as “Muldraugh’s Hill.” In the east the plateau is made somewhat higher by the capping of a third formation, a coarse-grained sandstone, and the edge of this being deeply dissected, gives a very rough country indeed. The lower sandstone, called the “Waverly” or “Knobstone,” is a part of the sub or lower carboniferous formation, and the strip as defined by the limits of this, and that of a black shale immediately below it, occupies 5,609 square miles. Its soils are naturally thin and poor, though occasional instances of careful treatment, particularly at the hands of the foreign population (Swiss and German colonists in Lincoln, Trappist Monks in Nelson) show they are susceptible of great improvement. The fruit-growing industry thrives here. Quarries of valuable building stone (freestone) occur in the hills.

THE MOUNTAINS.—All the State east of a line drawn from opposite Portsmouth on the Ohio river to the Wayne-Clinton county line on the Tennessee border is commonly called “The Mountains.” This region is identical with the eastern Kentucky coal field, containing 10,450 square miles. Physically, it is a deeply dissected plateau with true mountains of elevation on its southeast border. The general height of this plateau, the existence of the Cumberland plateau

of Tennessee, slopes from 1,500 feet near the Tennessee border and the Pine mountains to 1,000 feet and lower near the Ohio and Big Sandy rivers. The western and southeastern portions of this region are rugged in the extreme.

All along the western border the hard outcropping "basal conglomerate" of the coal measures presents precipitous escarpments to the westward and has been deeply trenched by westward flowing rivers and their tributary cross streams, so that the whole strip has been compared to a "Chinese Wall," tending to shut out eastern from central and western Kentucky. It is with difficulty that railroads can penetrate this region. The Pine and Cumberland mountains of the southeast border form even-topped ridges with few gaps or breaks in them. The Cumberland range presents its steepest slope to the eastward, the Pine mountains its steepest slope to the westward. The latter is a mountain range of the typical thrust-fault type, such as characterize this portion of the Appalachians. The crests, in some cases rising into peaks 3,000 feet above the sea, are capped with the same hard conglomerate or coarse sandstone which forms the western rim before described. Cross mountain ranges of equal or greater height connect the Cumberland and Pine mountain ranges. The whole mountain region of Kentucky is ill adapted for agriculture, but possesses stores of undeveloped mineral wealth in the form of iron and coal, and its lumber resources are also yet very great.

THE WESTERN COAL FIELDS.—Area, 4,683 square miles presents many of the same characters as the eastern, but it is not so elevated or rugged except along the border where the same hard conglomerate appears. The two fields were evidently once connected, if not across the whole State, at least over the southern part.

THE CAVERNOUS LIMESTONE AREA.—(8,882 square miles.) Surrounding the western coal field in a wide band and skirting the western margin of the eastern field in a narrower land with a slight interruption between the two strips, is a limestone plateau second only in height to the Cumberland plateau. It slopes from 1,200 feet in the eastern to 600 feet in the western part. This upland country is nearly everywhere pitted with circular depressions or "sinks," through which the surface water finds its way into underground passages. These passages, enlarged sometimes into truly spacious galleries and domes, constitutes the caves that have rendered this

region the most famous cavern region in the world. The surface is somewhat broken and diversified by knobs capped with sandstone. Famous among these is Green River Knob on the borders of Pulaski and Casey counties, 1,800 feet above the sea, the highest point between the eastern and western coal fields. These sandstone cappings are remnants of a once continuous sheet of sandstone, which united the bases of these two coal fields. The soils are generally intermediate in character between those of the bluegrass and those of the mountains. A large portion of the central and southwestern portions of this region was found by the early settlers to be treeless and received the name of "The Barrens." Now, however, it enjoys an excellent agricultural reputation, and tracts of it support a good timber growth.

THE JACKSON PURCHASE.—(2,587 square miles.) This area, acquired in 1820 by purchase from the Chicksaw Indians, includes all the State west of the Tennessee river. It constitutes both geologically and physically a region distinct from the rest of the State. The surface elevation is below 500 feet. Gravels, sands, clays and loams, geologically recent and hence but slightly consolidated, constitute the surface formation. These were formed in an embayment of the Gulf of Mexico when it reached as far north as the mouth of the Ohio. Kentucky would have been a Gulf State then. The soil exhibits considerable diversity in richness, but the average productiveness is high.

This region is the only one in the State surveyed according to the regular government township-section system. The counties present a regularity of form not seen elsewhere in the State.

DRAINAGE.

The rivers of Kentucky cut deep and in general are characterized by steep, rocky banks. This is particularly true where they emerge from the eastern mountain region, and again when they traverse the limestone district either of the bluegrass or of the region of caverns. The depth of these channels is from 300 to 400 feet, and this measurement is often given by the walls of a nearly vertical river cliff. A little distance back from the river the land again rises by a gentler slope to the general level of the surrounding country. This upper shallow basin is the old bed of the river before it trenched

its present gorge. Old river deposits (gravels, sands, and clay) strew this ancient flood plain. They date from a time when the whole country stood at a much lower level and the rivers emerging from the uplands (present mountain area), traversed the old base-level plain in winding courses to a not very distant sea. Then came an elevation of the land and the streams sunk for themselves channels along the meandering paths previously marked out. The rivers of Kentucky to-day, though hemmed in by rock banks, still inherit this crookedness.

The general course of Kentucky rivers is northwest into the Ohio.

The two rivers that cross the Cincinnati arch do so by making bends to the southward, resuming their northwest trend again before entering the Ohio. This throws the Cumberland for the greater portion of its navigable course within the limits of the State entirely. The Kentucky, in its sharp bend to the southwest from Boonesboro to Camp Nelson, follows the line of a very old fault. Kentucky is fortunate in the number of miles of navigable water within and along her borders. During a good stage of water one might travel by steamboat from Pikeville, Pike county, to Burnside, Pulaski county.

The navigability of Kentucky rivers is favored by their crookedness which decreases their fall per mile. On each side of them are "big bends," five to seven miles around and only a few feet across the narrowest part, which are well-known to river men. Most famous among these is the "Big Bend" on the north fork of the Kentucky river at Jackson, through the narrow neck of which the water tunnel was cut; the head of water thus obtained was used in running a mill.

NATURAL CURIOSITIES.

Mammoth Cave, with its miles of galleries, its domes, its subterranean lakes and rivers is justly famous; but there are hundreds of other caves in this cavernous limestone region, some of which rival in grandeur and beauty Mammoth Cave. The Carter county caves in the northeastern extension of this region are celebrated. Caverns are largest and most numerous in the upper Green river country, because the limestone is of a great thickness here, 400 to 500 feet, and has been protected in large measure by a covering of

701 *Seventeenth Biennial Report Bureau of Agriculture.*

sandstone. Through this sandstone and 250 feet into limestone below the Green river has trenched its course. This gives a range of 250 feet to downward percolating streams, and this is the vertical extent of the intricately connected domes and passageways of the larger caverns.

The course of the rivers where they break through the hard conglomerate measures bordering the eastern coal fields are usually marked by rapids and falls. Famous among these are "The Narrows" on Rockcastle river and the "Devil's Jumps" and Cumberland land Falls on Cumberland river. Emerging from the Pine Mountain gorge, this river has a gentle flow between wide banks until it strikes the conglomerate strip. Here it soon narrows up and plunges sixty-five feet over a sandstone escarpment and then for a distance of seven miles boils and cascades through a narrow boulder-filled gorge, which here marks the trail of the fall's retreat up the river. Several natural bridges occur in this same conglomerate belt. Three of these are famous. One in Pulaski county, not far from the line of the Cincinnati Southern railroad; one in Powell county, on the line of the Lexington & Eastern railroad, and one in Wolfe county.

All these bridges span divides between streams, which, cutting back their sources, have met in the soft shales underlying this sandstone. These sandstone natural bridges have not, therefore, been formed in the same way as the more celebrated limestone natural bridges. A small bridge of the latter type occurs on the Cumberland river near Creelsboro.

Conspicuous elevations, commonly called "Pilot Knobs," occur at frequent intervals over the State. These are isolated outliers of once more continuous plateaus and afford magnificent views over the surrounding country. Such a knob is the Montgomery Pilot Knob on the borders of Powell and Montgomery counties, and Green River Knob, before referred to. From the top of the latter, the horizon is so extended that on a clear day the borders of the two coal fields, here eighty miles apart, can be seen.

In the limestone regions both of Central and Southern Kentucky, streams often sink and disappear from view. Many of these may appear again as "big springs" often with volume enough to turn mills.

CLIMATE.

The climate of Kentucky is healthful and pleasant. The mean annual temperature is about 55 degrees Fahrenheit, and the mean annual rainfall about 46 inches. The mean temperature increases uniformly from about 50 degrees on the Cumberland range to about 60 on the Mississippi river. The rainfall is least (38 inches) in the Big Sandy valley and greatest (50 inches) along the southern boundary. Southerly to westerly winds prevail.

MINERAL WEALTH.

This consists mainly of the coal and iron in the eastern and western coal fields. Some iron occurs without these limits, as the famous Oriskany and Clinton carbonate and hematite ores of Bath county, the first ores worked west of the Alleghany mountains; and the limonite ores of the lower Cumberland river region, from which the first Bessemer steel in this country was made. Kentucky was at one time fourth State in the Union in the production of iron, but the industry has languished greatly in recent years.

Fluorspar has been extensively exploited in recent years in the counties of Crittenden and Livingston, and the lead and zinc associated with it has also been extracted with profit. These minerals occur in true fissure veins in this region, and the outlook for the mining of them in the future is bright.

Baryta is known to occur in pockets and fissures in limestones in various portions of the State and particularly in those of Lower Silurian age in Central Kentucky. It seems probable that the same enterprise which has characterized development in Southwestern Kentucky would also make mining of baryta in Central Kentucky profitable. Fluorspar is used in iron fluxing, in making opalescent glass, in the manufacture of pottery, and in furnishing fluorine for the making of hydrofluoric acid. Most of the commercial fluorite now used in this country comes from the two counties above named. Baryta, or barite, is used as an enamel in pottery making, as a pigment (too often it must be confessed in such proportions with white lead as to come under the head of an adulterant) and as a filler for canvas used in the sacking of hams.

Gold and silver, except in the most minute quantities, will not

be found in Kentucky. This statement needs to be made positively, as a great deal of time and money has been wasted in the search for these metals in a region where all geological precedents are against their occurrence.

PETROLEUM.—Petroleum has been known to occur in the State since the days of the salt well boring industry. The first flowing oil well struck in this country was in the boring for salt on Little Renick's creek, near Burksville, Cumberland county, in 1828. The oil spreading out over the water of the Cumberland river and, being set on fire, furnished the strange phenomenon of a "burning river," heralded far and wide in that day as one of the seven wonders of America. Later, some time in the "sixties," another gushing oil well was struck on the banks of the Cumberland at the mouth of Crocus creek and the burning of the oil on the waters produced a conflagration that rivaled that of the Renick's creek strike. Since the beginning of the development of the petroleum industry in this untily recently very large, has been reasonably constant. The southern tier of counties from Wayne to Allen first led in this production.

Beginning some three years ago, a wave of aoil excitement spread over the State which has resulted in the discovery of many more good wells in this southern district, as well as entirely new fields in other parts of the State. These fields may be enumerated and described as follows:

First. The Wayne-Clinton-Cumberland County Field.—Here two oil horidons are known. The upper just on top of the Black Shale and the lower about the bottom of the Hudson. On the uplands the Black Shale horizon is struck at from 400 to 500 feet, and the base of the Hudson horizon at from 800 to 900 feet. In the lowlands along the Cumberland river, the upper horizon is wanting as it outcrops in the river hills, but the lower is reached at from 400 to 600 feet.

Second. The Barren County Field.—This is the field with the oldest continuous production in the State. The wells are shallow—about 170 feet deep—and draw their oil from the Clinton Magnesian Limestone. A small production only comes from this field, but the outlook for the future is brighter than ever before, as the application of modern methods in pumping has greatly increased the output of these shallow wells. The product is shipped out by rail. It is the

only oil field at present known in Kentucky on the western flank of the great Cincinnati Anticline.

Third. The Knox County Field.—The wells here are mostly under 500 feet in depth; they draw oil supply from the lower coal measures.

Fourth. The Floyd-Knott County Field.—The wells here are in the neighborhood of 900 feet deep and also draw their oil from near the base of the coal measures. The wells produce from 1 to 20 barrels each daily.

Fifth. The Ragland Field on the Licking River in Bath and Rowan Counties.—The oil here comes from the Clinton Magnesian Limestone. The wells are from 350 to 450 feet deep. The oil is black and thick—a fine lubricating oil.

Besides these principal fields, there are others in incipient stages of development, like the Estill field, and sporadic wells, which may yet prove to be the pioneers in new fields.

Induced by the substantial development in so many different sections along the flank of the Cincinnati Anticline, the Standard Oil Company, at great expense, extended its pipe line from west Virginia through the counties of Eastern Kentucky, so that the whole product on the eastern flank now finds an outlet through it to its principal refineries.

Natural gas in quantities sufficient to warrant its being piped to Louisville has been found in Meade county, and the product of the Warfield district in Martin county has recently been piped to Huntington, W. Va. Salt has been obtained from brine springs and wells since the days of the early settlers. Famous places as resorts for salt making (and as resorts for wild animals) were Big Bone Lick in Boone county and Blue Lick on the Licking river in Nicholas county. Big Boone Lick has been famous also since the days of the French traveler, Longuiel (who visited the locality in 1739, before the days of permanent settlement by the whites) for the great number of mastodon and other extinct animal bones found entombed in the muck about these springs.

Phosphate of lime occurs abundantly in the limestone and soil of the bluegrass region, and to some extent in the strip immediately bordering this. It is not unlikely that deposits of this mineral will yet be found in commercial quantities in the State. Mineral waters are furnished by springs and wells in all parts of the

State, but the region in which they are especially abundant is the black shale outcrops immediately encircling the bluegrass area. Valuable beds of building stone occur in various portions of the State. The sandstone comes chiefly from the Waverly formation of the knobs district. A marble-like limestone, the so-called "Kentucky River Marble," is obtained from the white limestone formation of the Kentucky river outcropping from Boonesboro to Frankfort. A beautiful oolitic limestone much prized for facings in buildings, is obtained from the sub-carboniferous formation of the cavernous limestone district. It is known commonly as "Bowling Green Stone." A highly bituminous sandstone, called "Kentucky Asphalt Rock," is obtained from a belt of sandstone (the Kaskaskia and lower coal measure sandstones), surrounding in a belt about five miles wide the western coal field. Similar deposits have also been found in Carter county, Kentucky, at about the same geological horizon, or a little higher. It has been used in Louisville and in several Northern cities for street paving.

Hydraulic limestone is quarried and used in making cement at ground streams, is reported from the cavernous limestone district. Polished, it furnished a beautiful ornamental stone.

AGRICULTURAL WEALTH.

The soil in Kentucky is the greatest heritage it has received from the past. The qualities of this in different regions are different enough to stimulate the cultivation of a variety of crops and the development of a diversity of industries closely related to them.

Stockraising particularly the breeding of fast horses, is the distinguishing industry of the bluegrass counties. Tobacco is a staple product, especially in the limestone districts, and also in the Jackson Purchase region. Hemp is more extensively raised in the bluegrass counties. Fruit-raising is an industry in the Ohio river counties south from Cincinnati to Louisville and again along the line of the knobs. Corn is raised everywhere. Lumbering is an industry carried on at the heads of the larger rivers. The logs are commonly "splash-dammed" out of the smaller tributary streams and then rafted, or floated down singly, to mills along the middle and lower courses of the main stream. Yellow poplar (or the tulip tree) is the mainstay of this industry.

MANUFACTURING.

Is closely related to the agricultural products produced. Chewing and smoking tobacco, bagging and rope, flour and cornmeal, and distilled liquors would rank first among the manufactured products.

Iron smelting is at present very little carried on within the limits of the State. There was a time, however, when this was a thriving industry, and dismantled furnaces in the Red river and Slate creek regions and along the lower course of the Cumberland still remain as evidence of a glory that has departed.

VEGETATION AND ANIMALS.

The natural flora and fauna of Kentucky is a mingled Northern and Southern one. Such typical representatives of the Appalachian flora as the trailing arbutus, the laurel, the rhododendron, the spruce, thrive as well in the eastern mountain section of the State as they do in New England. In the southwestern part the southern pecan and the cypress grow. As characteristic of Kentucky may be mentioned the Kentucky coffee tree and the mountain magnolia, or cucumber tree. The tulip tree, or yellow poplar, is still abundant in eastern sections. The walnut thrives on rich lands. The ash, bearing tufts of mistletoe on its branches and carpeted with blue grass at its roots, is a noble tree in the northcentral stock-raising counties. The oak, black-jack and white, and post is the prevalent timber in southcentral portions and in what was once called "The Barrens."

With the exception of a few bear and some deer in the wildest portion of the eastern mountains, and in the "coalings" between the Tennessee and Cumberland rivers, in the western part, Kentucky contains no large game. Wildcat are still quite numerous in the more unsettled regions, and the wild turkey is occasionally seen. Among the smaller mammals may be enumerated the raccoon, opossum, fox, skunk, muskrat, rabbit, groundhog, squirrel. Among birds, the pheasant, quail (Bob White), heron, crane, crow, singing birds like the red-bird or "Kentucky Cardinal;" birds of passage like ducks and geese and finally the passenger pigeon. Kentucky was once the home of this bird, now apparently extinct.

LEGAL WEIGHTS AND MEASURES.

The following weights shall constitute a bushel of each article named, respectively:

Wheat	60 lbs.
Shelled corn	56 "
Corn in the ear, 70 lbs. from the first of November to the first of May following, and from the first of May to the first of November following	68 lbs.
Rye	56 "
Oats, shelled	32 "
Barley	47 "
Irish potatoes	60 "
Sweet potatoes	55 "
White beans	60 "
Castor beans	45 "
Clover seed	60 "
Timothy seed	45 "
Flax seed	56 "
Millet seed	50 "
Peas	60 "
Bluegrass seed	14 "
Buckwheat	56 "
Dried apples	24 "
Dried peaches	89 "
Onions	57 "
Bottom onion sets	88 "
Salt	50 "
*Stone coal	76 "
Bran	20 "
Plastering hair	8 "
Turnips	60 "
Unslacked lime	85 "
Corn meal	50 "
Fine salt	55 "
Hungarian grass seed	50 "
Ground peas	24 "
Orchard grass seed	14 "
English bluegrass seed	14 "
Hemp seed	44 "

Sec. 4822. Irish Potatoes—Pounds to barrel. One hundred and sixty pounds, net, of Irish potatoes shall constitute a merchantable barrel.

*The term "coal" includes anthracite, bituminous and other mineral coal.

STATISTICAL TABLES

TAKEN FROM REPORT OF

Board of Equalization.

NOTE.—In presenting the following statistical tables from the report of the State Board of Equalization, the commissioner regrets having to report that there are many discrepancies to be found. Some of the good tobacco growing counties have failed to report at all while in a majority of the counties the reports are inaccurate. The law provides no additional compensation for assessors gathering this information and no penalty for failure to do so. The county assessors, therefore, fail to ask questions relating to crop statistics and each year the total given falls short of the actual production. In a few instances the commissioner has undertaken to make estimates, but even with these additions the grand total given falls below the actual production. The Department of Agriculture has no means of getting these statistics in accurate form except through the assessors.

In another place in this report will be found a recommendation to the Legislature to the effect that the law be so amended as to insure full and accurate statistics on the important items of tobacco, corn, wheat, etc.

Seventeenth Biennial Report Bureau of Agriculture. 713

Clark	31,375	349,235	459,795	73,315	37,165	251,000
Clay	103	31,627	84,218	36,957	22,625	38,862
Clinton		40,793	55,621	13,407	15,882	29,227
Crittenden	9,400	209,280	116,960	11,395	26,965	99,575
Cumberland	2,540	23,152	63,291	7,363	29,808	78,379
Davies	27,360	762,179	317,908	111,119	21,101	316,783
Edmonson		32,900	47,176	16,210	12,788	60,399
Elliot		5,890	22,918	15,245	17,004	17,869
Estill		26,426	40,432	3,510	14,227	63,405
Fayette	540,235	1,618,293	354,711	346,671	36,027	426,449
Fleming		300,031	119,025	23,661	20,500	299,878
Floyd		41,338	53,889	30,346	31,138	74,940
Franklin	65,900	436,987	120,241	103,883	15,319	116,584
Fulton	650	187,810	127,985	16,345	252,683	36,365
Gallatin	500	62,287	37,710	5,125	10,225	24,006
Garrard	12,500	270,041	262,374	35,265	51,509	103,036
Grant	18,185	77,744	91,804	9,010	30,975	129,672
Graves		298,844	571,784	75,967	70,515	201,447
Grayson	719	84,454	89,786	30,180	18,350	62,875
Green	9,000	55,125	48,858	8,810	13,335	46,849
Greenup	15,900	75,345	57,628	12,161	24,674	55,941
Hancock		27,387	30,632	3,594	8,935	48,357
Hardin	25,530	142,691	260,899	36,471	24,291	142,902
Harlan		22,840	92,730	17,903	42,325	28,055
Harrison	9,500	179,916	175,430	119,535	43,945	114,017
Hart	26,170	127,399	214,443	36,698	32,383	149,766
Henderson	49,650	431,183	207,818	232,584	33,325	185,946
Henry	11,627	372,070	125,022	18,475	39,985	87,720
Hickman	125	424,654	187,652	22,300	32,708	74,959
Hopkins	952	562,466	114,782	53,407	22,265	228,042
Jackson	40	4,344	46,637	20,437	22,667	53,550
Jefferson	3,623,370	1,357,330	872,991	4,717,263	314,313	1,951,710
Jessamine	9,900	231,608	115,362	5,100	10,710	118,795
Johnson	4,600	43,360	74,276	25,370	40,521	86,724
Kenton	3,122,730	901,227	416,736	46,507	115,546	2,485
Knox		16,478	37,935	29,579	20,662	51,615
		58,010	70,310	40,712	40,169	169,090

714 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book-----					
	Amount of Bonds..	Amount of Notes Secured by Mortgage	Amount of Other Notes	Amount of Accounts	Amount of cash on Hand	Amount of cash on Deposit in bank..
	1	2	3	4	5	6
Larue	\$18,150	\$91,146	\$98,861	\$11,549	\$21,578	\$79,025
Laurel	2,000	64,546	85,012	48,367	22,525	122,044
Lawrence	1,205	27,483	52,047	28,527	44,225	105,720
Lee	647	13,302	21,292	17,004	33,863	40,954
Leslie	-----	16,325	69,783	27,603	27,892	26,706
Letcher	-----	14,247	50,091	20,055	26,633	63,616
Lewis	-----	46,320	49,623	9,610	13,957	75,051
Lincoln	7,550	261,856	168,685	34,378	14,076	180,837
Livingston	5,000	80,768	152,420	23,092	35,168	73,071
Logan	41,500	354,605	129,145	21,365	52,305	203,175
Lyon	250	56,632	38,517	12,052	19,317	29,562
Madison	2,000	296,760	437,120	36,220	44,970	266,740
Magoffin	2,788	21,235	47,251	18,041	21,905	35,260
Marion	39,245	319,289	286,315	45,878	61,915	111,731
Marshall	-----	40,255	194,250	20,630	22,540	92,925
Marth	-----	1,416	14,629	13,094	18,182	10,469
Mason	36,600	191,240	135,395	22,000	362,882	58,000
McCracken	11,900	149,540	136,353	109,685	53,350	53,002
McLean	-----	92,890	96,045	4,140	20,000	53,395
Meade	800	92,873	87,307	14,466	14,465	89,493
Menefee	-----	4,129	13,581	16,146	18,143	9,226
Mercer	-----	272,169	132,372	15,775	16,060	74,565
Metcalfe	1,200	28,076	66,345	14,681	16,241	107,559
Monroe	-----	40,384	161,022	14,840	18,170	106,405

Seventeenth Biennial Report Bureau of Agriculture. 715

Montgomery	1,000	169,149	203,530	50,710	13,242	170,308
Morgan	-----	15,513	62,763	33,817	38,640	56,319
Muhlenberg	11,400	240,245	62,661	33,957	26,325	43,509
Nelson	117,100	464,002	516,300	72,940	18,025	195,940
Nicholas	22,820	233,822	133,874	29,980	9,976	143,941
Ohio	14,080	69,861	192,457	22,543	26,637	175,118
Oldham	55,430	223,388	120,551	7,930	12,610	106,719
Owen	3,000	51,905	42,701	4,400	5,465	57,424
Owsley	-----	6,273	42,588	10,560	18,952	36,151
Pendleton	9,000	75,645	168,570	12,640	41,885	20,725
Perry	200	12,890	47,997	19,358	18,442	37,834
Pike	75	38,204	85,387	55,478	103,391	206,949
Powell	-----	34,483	103,123	10,085	19,418	22,895
Pulaski	4,500	88,711	95,096	65,499	42,732	145,128
Robertson	2,000	9,443	28,626	1,100	11,781	-----
Rockcastle	15,260	20,992	31,249	19,648	12,063	59,778
Rowan	-----	22,495	33,733	38,461	27,032	47,200
Russell	-----	68,829	86,043	15,496	29,739	84,356
Scott	25,500	376,721	136,894	22,150	79,912	115,090
Shelby	41,920	786,350	248,590	37,340	131,940	171,690
Simpson	7,000	261,274	98,479	15,350	61,210	39,494
Spencer	-----	103,880	111,290	2,400	10,100	15,110
Taylor	500	83,473	66,990	3,906	8,722	62,783
Todd	800	209,905	122,045	32,965	50,580	14,810
Trigg	61,500	141,856	57,054	9,175	19,910	51,457
Trimble	3,000	51,590	28,150	3,390	10,335	40,630
Union	-----	288,895	482,363	32,160	44,696	51,103
Warren	59,965	439,669	380,447	55,946	55,439	230,183
Washington	14,350	314,345	268,975	30,055	2,495	53,630
Wayne	-----	43,423	221,863	53,095	52,158	187,871
Webster	-----	165,950	136,625	32,600	46,540	100,835
Whitley	-----	116,374	226,130	112,387	104,015	239,083
Wolfe	2,792	19,874	71,666	31,373	25,779	113,735
Woodford	141,856	864,003	205,141	54,239	42,457	191,151
Total for 119 Counties	\$9,098,824	\$22,566,362	\$17,144,003	\$9,129,438	\$4,723,131	\$14,003,246

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	No. of Column in Assessor's Book					
		7	8	9	10	11	12
		Amount of cash on Deposit with other Corporations ..	Amount of Cash on Deposit with Individuals	Amount of all other Credits or Money at Interest	Amount of Stock in Joint Stock Companies or Associations	Amount of Stock in Foreign Corporations	No. of Acres of Land
Adair	6,100	100	2,686	10,000	21,900	231,396	
Allen	100	185	750	188,959		123,495	
Anderson	170	900	3,640	25	10,524	150,010	
Ballard	450	3,300	13,159	455	2,800	296,588	
Barren	200	180	6,675	5,500	1,180	192,633	
Bath	4,035	650	2,260	37,490	21,950	180,380	
Bell	400	100	1,800	17,067	32,600	152,935	
Boone	1,150		1,500	24,436	34,090	182,603	
Bourbon	1,380	275	450	915	9,000	85,871	
Boyle	490	340	10,959			112,543	
Bracken		915	8,760			125,707	
Breathitt		95	159			302,700	
Breckinridge	1,000	4,101	8,780		2,500	327,680	
Bullitt	600		7,324			172,522	
Butler	550		160		900	240,846	
Caldwell		25	290		450	204,243	
Calloway	30	715	660		1,250	228,313	
Campbell	14,000		2,900		25,660	91,386	
Carlisle						114,733	
Carroll	700	600	500			80,457	
Carter	600	831	10,300			211,361	
Casey	133	1,200	30		13,717	236,562	
Christian	7,085		4,525			416,887	

Seventeenth Biennial Report Bureau of Agriculture. 717

Clark	11,390	1,925	6,000	58,195	1,900	156,804
Clay	305	1,110	465	---	---	238,543
Clinton	---	208	1,642	---	---	120,244
Crittenden	---	400	5,000	350	---	222,194
Cumberland	---	8	45	250	---	162,539
Davless	6,354	5,860	79,825	10,941	9,166	248,982
Edmonson	1,292	---	1,579	925	---	155,884
Elliott	2,000	14	100	---	---	145,968
Estill	1,850	---	---	---	---	132,438
Fayette	4,430	8,200	23,350	53,025	69,330	176,868
Fleming	---	215	8,730	---	---	215,752
Floyd	5,626	4,089	18,378	800	---	310,744
Franklin	34,676	3,100	1,955	125,000	40,200	122,754
Fulton	2,635	---	---	1,200	8,000	115,113
Gallatin	---	---	---	---	3,500	60,745
Garrard	700	20	1,000	12,040	2,300	138,030
Grant	---	1,500	14,188	1,010	---	156,067
Graves	---	100	4,785	30,315	600	323,834
Grayson	---	---	150	5,620	---	294,834
Green	---	1,275	50	460	2,800	159,295
Greenup	249	200	18,350	3,330	2,210	185,120
Hancock	905	225	3,335	50	3,420	110,190
Hardin	6,175	170	280	12,600	18,160	352,799
Harlan	375	700	2,750	188	150	330,295
Harrison	2,000	1,432	9,980	770	4,604	184,293
Hart	---	865	2,134	5,208	100	224,407
Henderson	2,300	985	3,000	6,800	---	278,488
Henry	642	4,200	9,375	1,200	---	193,520
Hickman	450	---	6,500	75	1,200	149,200
Hopkins	240	59	3,400	1,000	---	332,853
Jackson	---	---	---	---	---	195,412
Jefferson	51,725	8,360	71,450	3,372,339	289,955	218,108
Jessamine	50	1,100	4,350	15,840	---	117,283
Johnson	1,265	774	1,799	25,000	250	192,097
Kenton	---	---	---	3,750	---	97,705
Knox	---	338	---	2,030	---	312,074
Knox	190	1,034	16,559	100	---	197,940

Seventeenth Biennial Report Bureau of Agriculture. 719

Montgomery	50	40	1,300	100	117,658
Morgan	1,100	200	100	1,000	224,019
Muhlenberg	1,850	2,650	3,200	500	293,101
Nelson					245,298
Nicholas				10,505	122,021
Ohio	2,156	155	16,130	175	344,592
Oldham	100		1,000	5,520	116,773
Owen	29,788	1,045	8,040		222,388
Owsley		198	300		127,926
Pendleton		875	100		169,051
Perry	1,800	10	5	200	370,397
Pike	1,950	2,204	2,829	1,000	528,224
Powell		25	1,380	850	64,092
Pulaski	1,520	754	828	2,485	374,472
Robertson	36,319				60,020
Rockcastle	300	1,400		4,200	201,943
Rowan	1,683		800		213,837
Russell	1,125	666	1,495	1,990	160,416
Scott	15,950		2,500	5,036	178,456
Shelby			4,000	5,000	240,400
Simpson			900		143,710
Spencer			114,678		115,234
Taylor	2,000	150	90	10,800	163,969
Todd			9,250		225,864
Trigg		386	300	100	268,589
Trimble			3,000		88,575
Union	500		1,600		208,378
Warren	665	2,415	26,645	460	324,089
Washington			700		180,836
Wayne	3	895	515	400	359,162
Webster	2,000	1,000	23,040		196,404
Whitley	12,111	253	40,782	110	318,224
Wolfe	193	1,154	920		148,720
Woodford	200	900		18,925	118,227
Total for 119 Counties	\$304,420	\$94,885	\$715,152	\$3,962,734	\$24,040,956

TABLE No. 1.—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Each Tract with Improvements		No. of City or Town Lots	Value with Improvements		No. of Thoroughbred or Standard Stallions	Value	No. of Thoroughbred or Standard Geldings
		15	16		18	19		20	21
Adair	-----	\$1,396,287	333		279,350	4		1,300	2
Allen	-----	1,156,826	270		132,845	2		200	1
Anderson	-----	1,584,270	449		425,520	4		550	
Ballard	-----	1,691,373	1,266		386,505	4		1,600	
Barren	-----	2,552,971	658		627,912	13		3,225	1
Bath	-----	2,704,736	640		377,629	2		200	10
Bell	-----	1,619,443	5,537		697,488	1		1,000	
Boone	-----	4,469,522	971		465,478	2		650	1
Bourbon	-----	9,665,295	2,260		2,291,060	35		10,550	79
Boyd	-----	1,193,571	4,312		2,812,065	3		800	3
Boyle	-----	3,844,682	1,816		1,813,479	16		5,160	6
Bracken	-----	2,097,454	939		558,085	1		100	1
Breathitt	-----	1,286,699	186		173,460	1		100	2
Breckinridge	-----	2,206,165	1,479		569,313	2		500	
Bullitt	-----	1,695,516	595		288,729	5		1,950	
Butler	-----	1,412,604			208,485	1		200	
Caldwell	-----	1,633,230	793		599,030				
Calloway	-----	2,297,482	805		552,019	11		2,300	
Campbell	-----	4,304,104			16,518,967	1		150	
Carlisle	-----	1,504,703	641		296,910	2		1,750	
Carroll	-----	1,580,761	946		810,605	13		3,200	2
Carter	-----	1,228,639	620		247,210				
Casey	-----	1,322,449	157		76,835				
Christian	-----	5,334,925	2,810		2,506,710	2		1,000	1

Seventeenth Biennial Report Bureau of Agriculture. 721

Clark	5,749,205	2,057	1,927,765	2	600	2
Clay	1,331,281	111	56,965	---	---	---
Clinton	709,065	132	65,805	2	450	---
Crittenden	1,654,765	833	482,345	3	1,300	---
Cumberland	1,009,073	149	93,985	1	250	---
Davies	5,822,410	2,004	5,468,494	19	3,675	1
Edmonson	1,025,143	---	68,509	1	250	---
Elliott	613,151	34	14,510	1	100	---
Estill	894,610	123	76,537	---	---	---
Payette	13,178,211	9,256	14,579,653	130	129,975	103
Fleming	3,449,998	6	587,848	3	600	3
Floyd	1,880,102	10	161,957	3	125	---
Franklin	2,777,227	1,846	2,739,657	6	2,150	1
Fulton	1,973,630	1,822	1,076,305	1	200	---
Gallatin	880,422	300	157,228	1	700	---
Garrard	3,527,188	---	481,905	---	500	---
Grant	2,222,065	601	377,835	2	1,060	2
Graves	4,312,917	1,936	1,572,828	9	4,400	1
Grayson	1,277,710	565	295,735	---	---	---
Green	859,053	130	77,667	1	100	---
Greenup	1,197,891	723	389,480	---	---	---
Hancock	1,177,824	703	237,619	1	2,000	---
Hardin	2,932,613	1,332	761,784	15	4,100	---
Harlan	2,636,879	332	106,185	---	---	2
Harrison	4,693,968	1,233	1,396,643	7	1,750	4
Hart	1,732,473	594	280,626	---	450	---
Henderson	5,329,902	3,236	3,701,160	3	1,450	1
Henry	3,018,982	1,086	716,605	---	---	1
Hickman	2,349,087	920	390,184	1	300	---
Hopkins	2,761,055	3,647	1,939,759	4	750	1
Jackson	999,943	38	16,110	---	---	---
Jefferson	12,438,185	---	107,201,425	9	1,800	1
Jessamine	4,206,554	734	729,390	1	500	---
Johnson	1,266,644	206	179,220	---	---	---
Kenton	4,068,160	4,186	21,982,527	---	---	---
Knott	1,401,814	23	17,075	---	18,553	---
Knox	1,816,945	517	386,515	---	---	---

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Each Tract with Improvements -----		No. of City or Town Lots -----		Value with Improvements -----		No. of Thoroughbred or Standard Stallions -----		Value -----		No. of Thoroughbred or Standard Geldings -----	
		15	16	16	18	19	20	21					
Larue -----		1,719,147	311		247,745		1,800		7		1,800		21
Laurel -----		1,264,527	439		316,965		900		3		900		
Lawrence -----		1,435,321	317		289,875		500		1		500		
Lee -----		523,610	505		117,535								
Leslie -----		1,173,909	60		37,595								
Letcher -----		1,547,155	38		32,450								
Lewis -----		1,585,359	672		301,873		500		1		500		
Lincoln -----		3,882,351	771		605,008		2,295		9		2,295		9
Livingston -----		1,548,823	1,840		225,419		1,450		7		1,450		3
Logan -----		3,312,685	1,256		833,570		1,500		5		1,500		
Lyon -----		902,030	645		263,091								
Madison -----		6,375,800	1,735		1,597,860		4,780		10		4,780		
Magoffin -----		1,023,899	90		47,080		250		2		250		
Marion -----		2,094,300	873		765,461		500		4		500		
Marshall -----		1,571,010	770		202,240		700		1		700		
Martin -----		715,941	36		63,768								
Mason -----		5,648,450	3,487		2,473,650		1,800		3		1,800		1
McCracken -----		2,363,102	7,046		7,006,664		325		3		325		3
McLern -----		1,433,180	862		378,810		150		1		150		150
Meade -----		1,539,576	529		141,725		150		1		150		2
Menefee -----		439,819	48		10,160								
Mercer -----		4,105,774	1,189		1,124,615		3,550		14		3,550		5
Metalfe -----		997,413	98		49,590								
Monroe -----		1,218,460	253		141,025		500		1		500		1

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value -----		No. of Thoroughbred or Standard Mares and Colts..		Value -----		No. of Stallions of Common Stock ---		Value -----		No. of Geldings, Mares and Colts of Common Stock	
		22	23	24	25	26	27	28	29	30	31	32	33
Adair	1	---	1	300	6	825	4,325						
Allen	125	---	1	50	15	1,580	2,839						
Anderson	25	---	9	550	11	1,325	3,156						
Ballard	---	---	42	3,035	129	8,775	3,572						
Barren	150	---	5	540	7	700	3,518						
Bath	500	---	23	900	36	3,020	2,642						
Bell	---	---	1	150	13	1,290	457						
Boone	150	---	5	525	8	900	3,110						
Bourbon	5,025	---	507	49,805	19	2,175	3,609						
Boyd	225	---	23	1,640	12	405	1,452						
Boyle	775	---	219	17,070	9	1,155	2,119						
Bracken	100	---	5	150	25	2,270	3,250						
Brenthitt	175	---	2	400	7	615	1,170						
Breckinridge	---	---	10	670	16	2,335	5,549						
Bullitt	---	---	8	750	14	1,840	3,245						
Buller	---	---	2	350	20	1,550	3,406						
Childwell	---	---	2	150	7	650	2,915						
Calloway	---	---	6	441	25	3,015	4,950						
Campbell	---	---	2	450	35	7,200	917						
Carlisle	---	---	1	150	6	650	3,801						
Carroll	400	---	6	450	6	775	2,451						
Carter	250	---	2	170	3	500	2,627						
Cawey	---	---	10	525	5	475	3,612						
Christian	150	---	73	8,425	11	1,085	2,509						

Seventeenth Biennial Report Bureau of Agriculture.

Clark	500	55	3,495	13	1,875	2,621
Clay	---	---	---	5	735	1,523
Clinton	---	3	400	7	790	1,353
Crittenden	---	5	210	13	1,125	2,849
Cumberland	---	6	560	9	735	1,882
Davless	25	20	1,750	29	4,310	6,988
Edmonson	---	1	85	5	548	1,880
Elliott	---	10	645	5	595	1,461
Estill	---	---	---	20	1,870	1,756
Fayette	8,775	3,571	366,745	160	10,100	4,045
Fleming	110	4	300	18	2,280	5,425
Floyd	---	11	417	14	915	1,887
Franklin	75	137	9,395	8	800	3,239
Fulton	---	20	2,200	17	2,050	2,353
Gallatin	---	4	475	7	825	854
Garrard	175	---	675	---	2,660	---
Grant	150	68	2,600	05	4,900	4,240
Graves	500	18	2,375	37	5,350	8,322
Grayson	---	16	650	17	2,645	5,775
Green	---	1	100	8	1,215	2,648
Greenup	---	24	2,065	13	940	1,879
Hancock	---	1	50	19	2,970	2,356
Hardin	---	18	2,085	23	1,765	7,462
Harlan	100	---	---	17	1,010	517
Harrison	700	6	300	35	6,535	5,976
Hart	---	---	400	12	3,100	4,705
Henderson	100	17	1,040	44	4,130	5,076
Henry	100	3	140	85	4,355	2,768
Hickman	---	---	---	9	860	3,043
Hopkins	150	21	1,295	37	2,585	3,497
Jackson	---	2	50	2	200	1,492
Jefferson	125	59	7,960	182	13,780	6,374
Jessamine	---	104	6,640	22	1,485	1,806
Johnson	---	11	725	11	835	1,675
Kenton	---	---	---	1	100	1,550
Knox	---	1	75	4	450	823
Knox	---	---	---	---	---	1,549

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book-----	Value -----		No. of Mules and Mule Colts -----		Value -----		No. of Jacks -----		Value -----		No. of Jennets-----	
		28	29	30	31	32	33						
Adair -----	226,132	1,726	112,295	30	33	2,540	23						
Allen -----	147,815	2,585	166,934	65		4,080	52						
Anderson -----	133,250	421	21,280	27		3,190	28						
Ballard -----	175,932	2,085	114,605	38		3,805	9						
Barren -----	190,412	2,538	165,444	35		2,555	47						
Bath -----	107,560	1,362	77,396	31		3,590	28						
Bell -----	31,100	629	52,155	2		250							
Boone -----	179,090	490	34,400	12		2,075	10						
Bourbon -----	180,070	1,587	120,925	21		3,100	22						
Boyd -----	84,112	271	19,090	1		100	1						
Boyle -----	107,603	1,078	81,985	61		10,890	120						
Bracken -----	123,765	77	3,150	12		610	2						
Breathitt -----	67,587	893	69,627	7		850	5						
Breckinridge -----	307,205	2,322	164,424	34		3,920	14						
Bullitt -----	163,908	881	55,872	19		3,005	7						
Butler -----	213,129	2,513	190,368	94		7,080	43						
Caldwell -----	150,902	2,284	129,803	14		1,190	9						
Calloway -----	328,164	3,514	252,572	40		4,965	24						
Campbell -----	57,995	53	3,195	1		100	2						
Carlisle -----	201,159	1,324	78,847	16		1,510	11						
Carroll -----	103,005	468	23,080	8		2,400	21						
Cartter -----	157,003	723	50,330	9		1,000	10						
Casey -----	191,395	1,292	93,025	24		2,158	51						
Christian -----	147,200	3,894	252,390	28		3,005	24						

Seventeenth Biennial Report Bureau of Agriculture. 729

Clark	163,193	1,401	109,845	49	7,960	49
Clay	95,520	1,576	128,837	13	875	3
Clinton	75,795	821	63,095	16	1,830	18
Crittenden	168,955	1,584	109,455	19	1,835	21
Cumberland	94,649	1,174	78,933	15	1,120	16
Davless	379,064	3,293	149,085	22	2,405	16
Edmonson	123,792	979	71,616	15	1,350	7
Elliott	101,877	737	57,485	14	1,410	16
Estill	90,055	859	59,329	10	745	6
Fayette	217,210	1,739	135,485	60	9,225	91
Fleming	274,195	893	54,680	49	6,060	65
Floyd	108,082	945	80,240	11	875	5
Franklin	158,630	720	49,573	9	1,455	5
Fulton	156,400	1,799	130,350	13	1,700	5
Gallatin	34,225	232	11,420	3	475	---
Garrard	164,773	---	105,775	---	6,175	---
Grant	162,717	519	20,935	29	3,350	11
Graves	511,395	4,951	321,351	68	8,465	48
Grayson	281,175	1,623	89,995	24	2,160	29
Green	103,170	1,823	86,176	14	1,315	13
Greenup	99,058	862	53,055	10	885	3
Hancock	127,124	691	45,400	9	1,175	5
Hardin	312,504	2,366	135,620	61	5,520	57
Harlan	38,355	720	58,132	6	425	1
Harrison	265,630	730	33,875	49	6,440	41
Hart	227,189	2,305	120,548	---	2,197	14
Henderson	246,915	4,172	250,330	21	3,255	12
Henry	124,750	820	47,655	8	1,250	3
Hickman	181,795	2,099	133,355	17	1,515	13
Hopkins	176,000	2,745	143,955	45	2,835	31
Jackson	99,002	995	85,730	13	917	5
Jefferson	417,330	2,381	173,745	7	1,850	2
Jessamine	78,605	978	50,500	20	2,490	12
Johnson	103,887	901	83,129	24	1,960	14
Kenton	119,421	114	6,025	1	200	3
Knot	50,611	512	42,955	4	270	6
Knox	96,520	1,566	122,400	21	2,710	13

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book-----					
	28	29	30	31	32	33
No. of Mules and Mule Colts-----						
Value-----						
No. of Jacks-----						
Value-----						
No. of Jennets-----						
Value-----						
No. of Column in Assessor's Book-----						
Laurel-----	176,560	1,198	88,214	20	2,275	16
Laurel-----	144,761	1,400	108,579	18	1,570	7
Lawrence-----	174,676	771	59,217	31	2,500	12
Lee-----	53,272	482	37,875	8	865	
Leslie-----	26,930	643	56,479	1	300	1
Letcher-----	51,948	786	60,303	43	4,035	
Lewis-----	161,709	524	28,315	10	875	2
Lincoln-----	208,387	1,577	116,152	112	13,180	155
Livingston-----	184,522	2,175	146,666	23	2,776	17
Logan-----	197,695	3,929	212,545	47	3,930	48
Lyon-----	74,374	1,174	72,255	10	345	5
Madison-----	231,180	1,928	138,060	79	8,300	113
Magoffin-----	82,306	1,280	97,688	19	1,945	11
Marion-----	147,000	2,345	155,696	55	7,505	86
Marshall-----	243,405	1,952	133,090	19	2,225	13
Martin-----	27,122	249	19,834	3	400	2
Mason-----	70,475	416	15,975	25	1,705	13
McCracken-----	98,495	1,063	50,024	36	2,065	23
McLean-----	163,510	1,236	70,260	12	1,100	18
Meade-----	198,348	1,094	70,745	22	2,500	24
Menefee-----	62,427	230	15,283	3	160	4
Mercer-----	193,773	1,013	75,634	44	5,260	16
Metcalfe-----	135,250	1,504	97,815	24	1,870	16
Monroe-----	143,910	1,846	143,570	34	2,355	34

Montgomery	94,520	966	53,110	28	3,725	68
Morgan	158,943	1,340	110,215	17	1,515	6
Muhlenberg	181,658	2,709	163,738	34	2,290	25
Nelson	178,235	1,992	127,103	35	4,550	69
Nicholas	171,865	449	21,835	29	3,600	31
Ohio	395,002	2,467	149,711	44	3,565	8
Oldham	92,070	928	71,555	14	1,470	8
Owen	194,398	549	224,146	33	3,065	23
Owsley	68,151	646	59,665	6	915	3
Pendleton	217,915	224	10,800	11	1,420	6
Perry	42,930	534	46,100	6	375	1
Pike	136,766	1,452	124,822	5	575	1
Powell	43,155	416	26,021	10	655	1
Pulaski	273,848	3,062	231,164	47	3,840	36
Robertson	84,731	64	2,995	3	200	3
Rockcastle	127,840	824	59,054	12	915	7
Rowan	59,510	520	41,705	5	460	5
Russell	131,042	1,133	89,867	23	2,600	31
Scott	173,545	1,054	65,685	41	4,500	36
Shelby	217,390	1,927	136,350	48	9,830	35
Simpson	108,780	1,930	104,615	20	1,695	11
Spencer	72,640	561	18,100	14	1,040	6
Taylor	135,620	1,292	73,960	22	2,040	9
Todd	103,975	2,930	153,375	28	2,025	24
Trigg	117,521	3,005	172,449	38	3,410	26
Trimble	137,155	328	19,205	7	850	4
Union	178,605	3,067	173,580	17	1,525	68
Warren	244,699	3,573	248,813	44	5,265	68
Washington	130,605	1,014	56,545	87	8,905	92
Wayne	157,359	2,280	183,226	22	2,170	23
Webster	147,875	1,921	102,370	26	1,905	22
Whitley	138,178	2,337	191,177	26	1,185	30
Wolfe	93,558	667	57,273	3	340	1
Woodford	172,492	1,347	132,563	9	1,340	5
Total for 119 Counties	\$18,239,034	\$167,848	\$11,205,927	1,910	\$317,548	2,576

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book					No. of Bulls, Cows, Calves and Steers
	Value	No. of Thoroughbred or Standard Bulls	Value	No. of Thoroughbred and Standard Cows and Calves	Value	
	34	35	36	37	38	
Adair	427	4	140	1	20	
Allen	581	1	25	12	265	
Anderson	740	5	75			
Ballard	155	7	190	131	1,692	
Barren	825	7	575	62	1,115	
Bath	800	4	100	65	826	
Bell		2	50			
Boone	314	4	110	25	500	
Bourbon	850	20	815	227	6,760	
Boyd	15	3	110	50	1,105	
Boyle	5,575	12	340	113	3,047	
Bracken	30	9	140	46	1,105	
Breathitt	150	8	185	1	100	
Breckinridge	395	12	363	83	2,485	
Bullitt	170	12	140	29	930	
Butler	635	2	65			
Caldwell	183	2	60			
Calloway	515	2	55		120	
Campbell	50	7	210	143	2,680	
Carlisle	169					
Carroll	395	3	90	62	1,375	
Carter	202	1	20	1	20	
Casey	1,267	3	55	20	335	
Christian	260	4	165	27	630	

Seventeenth Biennial Report Bureau of Agriculture. 783

Clark	1,300	26	1,130	155	5,315	8,378
Clay	55	3	85	4	70	10,162
Clinton	615					4,845
Crittenden	455	7	290	4	90	6,197
Cumberland	276			2	40	4,975
Davies	295	11	365	41	1,310	8,258
Edmonson	151	1	60	3	18	6,616
Elliott	365	3	49	15	217	6,609
Estill	80					5,945
Fayette	3,500	20	820	219	5,736	5,731
Fleming	1,965	9	330	4	125	10,004
Floyd	25	5	110		40	10,797
Franklin	110			10	250	4,772
Fulton	50	6	235	6	125	4,078
Gallatin		2	75			1,098
Garrard	720		35		1,190	
Grant	520	12	735	104	2,204	5,638
Graves	597	10	210	8	165	9,673
Grayson	130	5	215	9	205	11,078
Green	295			3	95	5,187
Greenup	99	3	100	54	932	6,067
Hancock	153	2	90	16	335	3,363
Hardin	950	19	560	174	3,087	13,126
Harlan	50	1	50	1	50	5,876
Harrison	1,500	22	595	174	4,015	7,428
Hart	698	4	285	4	1,040	10,619
Henderson	230	2	60	29	690	7,518
Henry	125	5	180	104	3,285	3,997
Hickman	155	3	125	1	50	4,898
Hopkins	360	6	215	76	740	7,066
Jackson	117	5	104			6,923
Jefferson	180	5	415	2,093	12,060	4,430
Jessamine	500	11	310	47	1,030	3,411
Johnson	205	5	105	7	145	7,976
Kenton	50	2	100			3,303
Knott	135					5,899
Knox	515	5	95	1	40	7,735

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	No. of Thoroughbred or Standard Bulls			Value			No. of Thoroughbred and Standard Cows and Calves			Value			No. of Bulls, Cows, Calves and Steers		
		34	35	36	37	38	39	40	41	42	43	44	45	46	47	
Larue	555	4	150	10	285	5,617										
Laurel	173	1	30	4	115	10,134										
Lawrence	140	10	218	17	315	19,704										
Lee						4,235										
Leslie	10	1	15			6,084										
Letcher						6,029										
Lewis	40	1	40	40	688	6,314										
Lincoln	4,625	11	401	107	5,200	8,086										
Livingston	164	10	465	34	675	8,605										
Logan	830	15	425	113	2,015	8,082										
Lyon	145	4	200			4,006										
Madison	1,940	11	410	90	2,430	14,715										
Magoffin	350	18	308	130	1,050	8,108										
Marion	2,355	7	240	12	300	6,033										
Marshall	160					7,007										
Martin	80					4,397										
Mason	345	14	450	38	1,345	4,455										
McCracken	345	11	165	11	220	3,951										
McLennan	230			2	50	6,090										
Meade	500	4	185	2	60	6,910										
Menefee	75			1	25	2,188										
Mercer	245	1	50	24	800	6,783										
Metcalfe	173	1	60			5,604										
Monroe	680					5,760										

Montgomery	2,160	3	225	37	945	9,168
Morgan	115	2	50	3	70	9,058
Muhlenberg	640	3	55	5	90	8,535
Nelson	2,230	4	130	32	1,010	7,451
Nicholas	875	6	160	57	1,300	6,354
Ohio	110	3	86	1	50	12,388
Oldham	275			5	75	4,569
Owen	615	8	180	26	545	4,469
Owsley	95	2	85			3,691
Pendleton	200	2	50	6	150	6,091
Ferry	75	2	45			6,064
Pike	15	10	131	3	75	13,412
Powell		2	45	1	25	3,005
Fulaski	1,100	18	340	170	2,586	14,700
Robertson	55			18	360	2,438
Rockcastle	175	3	80			6,419
Rowan	75					4,100
Russell	620	5	92	5	50	3,542
Scott	1,387	5	200	74	2,095	6,047
Shelby	1,040	52	3,230	808	35,880	8,882
Simpson	125	30	225	22	405	3,302
Spencer	85	1	20	10	200	4,310
Taylor	115			6	250	5,478
Todd	440	11	270	65	1,215	4,520
Trigg	455	5	202	13	280	7,479
Trimble						3,009
Union	35	26	1,075	132	4,040	9,345
Warren	631	17	145	145	3,050	8,799
Washington	2,535	9	375	37	1,275	486
Wayne	770	4	50	1	50	10,753
Webster	255	1	25	7	175	5,028
Whitley	370	1	25	4	65	14,552
Wolfe	45	1	30			6,596
Woodford	130	14	575	73	3,050	4,040
Total for 119 Counties	\$64,504	738	\$25,149	\$6,964	\$145,741	\$768,507

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value -----		No. of Thoroughbred or Standard Bulls -----		Value -----		No. of Thoroughbred and Standard Cows and Calves -----		Value -----		No. of Bulls, Cows, Calves and Steers	
		34	35	36	37	38	39						
Larue -----	555	4	150	10	285	5,617							
Laurel -----	175	1	30	4	115	10,154							
Lawrence -----	140	10	218	17	315	12,794							
Lee -----	10	1	15			4,235							
Leslie -----						6,084							
Letcher -----	40	1	40		688	6,922							
Lewis -----	4,625	11	401	197	5,200	6,314							
Lincoln -----	164	10	465	24	675	8,686							
Livingston -----	830	15	425	112	2,035	8,695							
Logan -----	145	4	200			8,082							
Lyon -----	1,940	11	410	90	2,430	4,066							
Madison -----	350	18	368	130	1,959	14,715							
Magoffin -----	2,355	7	240		390	8,168							
Marion -----	160					6,053							
Marshall -----	80					7,097							
Martin -----	345	14	450	38	1,345	4,327							
Mason -----	345	11	165	11	220	4,425							
McCracken -----	230					2,221							
McLean -----	590	4	185			5,926							
Meade -----	75					60							
Menefee -----	245	1	50			25							
Mercer -----	173	1	60			800							
Metcalfe -----	680												
Monroe -----													

Montgomery	2,160	3	225	37	945	9,168
Morgan	115	2	50	3	70	9,058
Muhlenberg	640	3	55	5	80	8,535
Nelson	2,230	4	130	32	1,010	7,451
Nicholas	875	6	160	57	1,300	6,354
Ohio	110	3	86	1	50	12,388
Oldham	275			5	75	4,569
Owen	615	8	180	26	545	4,469
Owsley	95	2	85			3,691
Pendleton	200	2	50	6	150	6,081
Perry	75	2	45			6,064
Pike	15	10	131	3	75	13,412
Powell		2	45	1	25	3,005
Pulaski	1,100	18	340	170	2,586	14,700
Robertson	55			18	360	2,438
Rockcastle	175	3	80			6,419
Rowan	75					4,100
Russell	620	5	92	5	50	3,542
Scott	1,387	5	200	74	2,095	6,047
Shelby	1,040	52	3,230	808	35,880	8,882
Simpson	125	30	225	22	405	3,392
Spencer	85	1	20	10	200	4,310
Taylor	115			6	250	5,478
Todd	440	11	270	65	1,215	4,520
Trigg	455	5	202	13	280	7,479
Trimble						3,009
Union	35	26	1,075	132	4,040	9,345
Warren	631	17	730	145	3,050	8,799
Washington	2,535	9	375	37	1,275	486
Wayne	770	4	50	1	50	10,753
Webster	255	1	25	7	175	5,026
Whitley	370	1	25	4	65	14,552
Wolfe	45	1	30			6,596
Woodford	130	14	575	73	3,050	4,040
Total for 119 Counties	\$64,504	738	\$25,149	\$6,964	\$145,741	\$768,507

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value		No. of Sheep		Value		No. of Hogs		Value		Value of Agricultural Implements	
		40	41	42	43	44	45						
Adair	-----	103,581	3,008	6,950	14,900	46,663	16,923						
Allen	-----	91,537	3,428	8,573	15,759	46,079	16,923						
Anderson	-----	76,095	8,175	27,145	5,701	28,480	6,365						
Ballard	-----	58,005	812	2,420	10,808	38,739	27,285						
Barren	-----	92,616	5,089	12,766	11,638	39,315	15,099						
Bath	-----	109,463	4,817	14,320	7,122	29,205	10,261						
Bell	-----	38,702	833	1,367	2,137	8,030	1,562						
Boone	-----	139,570	13,983	60,057	11,482	60,861	22,670						
Bourbon	-----	293,515	24,394	82,080	10,306	52,590	20,710						
Boyd	-----	81,119	894	2,707	4,310	19,630	6,989						
Boyle	-----	147,379	3,620	11,762	6,566	31,740	24,565						
Bracken	-----	55,386	1,098	3,416	5,600	25,309	9,874						
Breathitt	-----	138,706	3,406	6,643	10,870	26,000	849						
Breckinridge	-----	144,998	7,809	25,876	18,111	67,744	45,434						
Bullitt	-----	83,217	2,927	9,096	10,791	44,364	25,525						
Butler	-----	120,666	4,166	10,145	18,431	62,040	23,511						
Caldwell	-----	77,381	2,265	5,218	12,729	37,248	11,162						
Calloway	-----	81,338	2,903	6,395	19,678	50,822	25,517						
Campbell	-----	31,975	990	3,608	1,155	6,373	13,065						
Carlisle	-----	52,711	1,518	4,497	16,429	53,940	18,805						
Cartroll	-----	53,577	4,695	16,331	5,025	24,915	13,907						
Carter	-----	132,379	1,164	2,550	8,074	31,558	8,924						
Casey	-----	99,984	4,691	13,967	11,785	7,433	7,433						
Christian	-----	61,455	2,308	3,010	13,833	58,530	60,400						

Seventeenth Biennial Report Bureau of Agriculture. 787

Clark	206,245	18,955	76,650	8,367	44,585	17,995
Clay	142,139	4,065	9,093	12,959	41,026	3,213
Clinton	50,496	2,127	3,897	7,729	20,913	6,261
Crittenden	70,455	3,326	9,025	12,835	38,110	23,240
Cumberland	56,368	2,076	3,382	10,568	30,305	6,639
Davless	133,734	2,602	7,056	11,686	54,990	53,548
Edmonson	87,491	2,479	7,745	9,082	30,790	9,357
Elllott	93,494	1,797	4,346	8,790	27,011	6,881
Estill	89,897	1,180	3,319	8,362	28,209	3,562
Fayette	143,240	6,732	23,069	3,762	24,817	25,785
Fleming	185,544	6,835	25,110	14,639	64,729	30,047
Floyd	145,420	3,037	4,603	14,969	39,173	788
Franklin	90,328	5,047	18,100	4,497	25,812	8,175
Fulton	46,305	2,113	5,045	10,877	36,440	23,815
Gallatin	16,187	2,431	7,553	1,285	6,397	4,259
Garrard	99,732	23,930	39,752	7,916	51,173	18,609
Grant	92,637	11,698	39,752	32,956	34,402	11,675
Graves	123,602	4,563	11,777	17,954	99,141	45,338
Grayson	124,505	7,487	18,540	17,954	54,830	23,575
Green	61,024	2,527	5,236	9,418	26,086	10,549
Greenup	90,606	668	2,239	5,055	24,128	13,032
Hancock	44,521	1,307	3,909	5,262	19,316	19,208
Hardin	177,616	10,938	31,461	20,257	69,242	33,828
Harlan	79,792	2,408	4,387	10,650	22,860	1,445
Harrison	152,579	16,228	62,645	11,217	58,282	17,529
Hart	141,453	5,875	12,331	14,575	52,329	17,612
Henderson	107,912	2,118	5,528	21,316	82,787	45,094
Henry	78,765	6,846	28,488	5,316	30,012	17,957
Hickman	51,571	1,861	5,275	18,422	58,156	31,495
Hopkins	69,919	2,540	5,168	10,997	33,210	19,512
Jackson	105,537	3,523	9,684	9,333	28,116	2,391
Jefferson	118,115	2,392	14,430	7,251	36,135	52,140
Jessamine	40,620	3,650	13,440	3,683	17,300	12,270
Johnson	128,917	1,865	4,400	9,924	31,064	5,164
Kenton	68,423	3,428	10,206	389	2,153	---
Knott	77,193	3,213	5,810	9,181	24,931	1,879
Knox	106,260	2,177	4,123	9,260	34,580	9,625

TABLE No. 1.—Continued.

COUNTIES	No. of Column in Assessor's Book						
	Value -----	No. of Sheep -----	42	No. of Hogs -----	Value -----	Value of Agricultural Implements	
	40	41	43	44	45		
Larue -----	82,705	3,368	10,919	10,761	42,425	29,591	
Laurel -----	140,001	3,934	8,588	9,272	31,235	11,233	
Lawrence -----	184,610	4,123	11,414	13,404	47,564	8,504	
Lee -----	71,131	947	2,290	5,761	18,704	2,755	
Leslie -----	89,651	1,872	3,610	11,182	24,527	1,750	
Letcher -----	83,204	2,896	4,841	11,910	22,940	4,125	
Lewis -----	107,631	1,736	4,913	5,119	27,880	12,695	
Lincoln -----	169,050	8,627	30,958	10,440	47,511	25,679	
Livingston -----	99,864	3,227	8,812	18,245	55,538	18,372	
Logan -----	90,300	4,297	11,900	14,461	56,880	46,410	
Lyon -----	52,103	875	2,132	9,156	23,778	10,391	
Madison -----	273,170	6,143	18,450	12,494	54,630	12,080	
Magoffin -----	118,839	2,490	4,635	11,302	31,505	2,305	
Marion -----	86,288	6,059	17,467	8,481	33,669	17,412	
Marshall -----	75,465	3,183	6,750	19,671	46,005	30,640	
Martin -----	62,193	957	1,779	4,774	11,914	1,362	
Mason -----	79,770	5,536	13,840	6,895	30,660	12,830	
McCracken -----	23,775	746	1,560	2,736	10,444	8,795	
McLean -----	63,945	1,840	4,380	9,257	29,840	20,895	
Meade -----	86,156	5,227	17,233	7,368	47,033	25,616	
Menefee -----	52,208	985	2,706	4,915	16,401	1,827	
Mercer -----	107,281	14,765	53,545	11,849	52,078	27,659	
Metcalfe -----	68,399	2,679	6,472	8,951	31,125	12,263	
Monroe -----	70,860	2,924	6,970	13,526	42,185	8,540	

Seventeenth Biennial Report Bureau of Agriculture. 789

Montgomery	194,220	6,763	19,668	4,090	15,790	8,350
Morgan	137,035	3,721	9,856	12,093	36,812	12,211
Muhlenberg	100,740	3,580	7,580	12,197	35,759	19,916
Nelson	125,160	12,920	38,930	12,482	51,490	32,495
Nicholas	107,719	12,917	41,090	19,945	27,775	16,710
Ohio	160,290	5,523	14,969	19,945	75,142	32,931
Oldham	85,372	9,438	36,500	6,591	29,268	18,300
Owen	77,816	12,708	42,069	4,028	22,090	10,418
Owsley	74,142	1,932	4,317	5,678	19,394	3,410
Pendleton	108,585	7,559	26,245	8,567	35,605	26,320
Perry	92,333	2,743	5,185	1,876	25,631	1,456
Pike	170,698	3,958	7,077	18,299	48,058	4,923
Powell	42,568	633	1,509	3,441	13,672	2,208
Pulaski	209,344	6,774	15,897	6,976	60,141	23,781
Robertson	39,792	3,372	11,079	3,990	15,617	1,002
Rockcastle	91,470	2,177	5,348	8,720	30,141	5,306
Rowan	66,464	881	2,248	5,339	18,275	5,734
Russell	63,647	2,505	5,827	11,919	32,349	13,426
Scott	123,999	15,906	61,049	5,010	25,811	12,823
Shelby	182,580	14,722	53,380	16,732	81,020	59,410
Simpson	35,703	2,598	5,304	9,606	28,124	25,665
Spencer	50,975	6,986	19,340	7,848	21,645	9,500
Stacy	69,335	1,889	4,588	8,921	33,508	12,197
Taylor	48,415	2,481	5,775	7,611	31,090	22,660
Todd	73,726	3,793	7,946	14,704	41,974	17,026
Trimble	53,540	2,348	8,415	4,219	18,270	15,700
Union	106,845	1,146	3,090	20,522	68,610	37,595
Union	129,002	5,467	14,700	20,119	72,504	35,077
Washington	72,880	10,007	29,575	7,882	30,575	12,300
Washington	137,022	6,140	10,126	17,320	45,677	17,412
Wayne	52,785	1,479	3,105	7,610	28,770	23,550
Webster	192,130	4,100	7,995	15,303	46,872	14,085
Webster	87,003	2,351	5,822	7,247	20,959	5,340
Whitley	94,202	4,856	20,020	6,347	41,922	38,592
Woodford						
Total for 119 Counties	\$11,859,658	\$548,906	\$1,679,732	\$1,214,123	\$4,401,321	\$2,021,799

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Agricultural Products for Taxation after Deducting Value of Crops Grown.	Value of Wagons Carriages, Bicycles and Vehicles of every kind.	Value of Slaughtered Animals	Value of Safes.	Value of Household and Kitchen Furniture	Value of Manufacturing Implements, Machinery, of all kinds
	48 47 48	49	50	51	52	53	
Adair	804	43,814	35	435	121,508	27,219	
Allen	---	43,814	271	1,772	101,753	10,055	
Anderson	75	36,985	80	240	137,350	14,870	
Ballard	783	64,723	525	3,032	104,715	9,707	
Barren	1,000	50,798	140	1,475	103,513	26,614	
Bath	1,100	27,343	55	2,035	74,065	26,071	
Bell	68	11,819	270	1,880	59,590	57,728	
Boone	11,672	52,909	---	5,815	120,055	9,584	
Bourbon	12,605	47,840	115	710	54,575	9,550	
Boyd	2,973	34,174	248	2,487	224,376	146,304	
Boyle	800	39,374	140	1,380	104,524	15,115	
Bracken	9,021	28,778	---	3,390	78,392	12,876	
Breathitt	58	12,056	15	447	99,158	12,515	
Breckinridge	13,469	55,597	72	1,985	211,095	27,072	
Bullitt	1,565	46,071	5	565	99,912	8,475	
Butler	5,836	43,024	545	3,089	140,073	30,516	
Caldwell	1,764	40,272	15	507	117,628	22,925	
Calloway	2,347	79,104	20	1,450	165,901	34,336	
Campbell	1,615	32,550	---	1,375	20,500	203,875	
Carlisle	105	36,004	---	260	110,888	2,032	
Carroll	4,710	26,249	---	505	135,011	6,140	
Carter	1,220	20,526	---	730	121,180	25,508	
Casey	3,918	35,398	83	500	101,647	11,940	
Christian	1,350	62,795	75	2,055	150,225	92,035	

Seventeenth Biennial Report Bureau of Agriculture. 741

Clark	51,325	55,455	50	410	130,800	93,640
Clay	941	14,625	37	729	86,698	15,564
Clinton	900	16,133	-----	290	52,500	13,067
Crittenden	3,125	36,605	50	1,035	75,520	2,045
Cumberland	1,522	17,618	73	1,538	55,300	9,429
Davless	2,465	121,618	490	5,719	448,842	141,358
Edmonson	1,601	21,334	45	96	79,023	672
Elliott	299	9,181	212	225	60,003	13,229
Estill	1,084	11,594	450	255	59,985	19,726
Fayette	14,105	156,987	625	10,808	195,660	583,355
Fleming	360	56,956	25	420	152,398	6,540
Floyd	688	13,057	-----	2,423	100,449	12,017
Franklin	250	49,447	50	1,785	172,065	61,185
Fulton	300	36,595	100	155	182,565	36,735
Gallatin	120	8,406	5	125	12,146	2,508
Garrard	10,130	40,917	20	1,730	67,410	7,934
Grant	21,333	36,319	540	7,120	103,032	7,609
Graves	1,010	123,013	75	1,430	337,727	41,445
Grayson	575	39,490	95	2,295	138,450	9,730
Green	330	23,208	25	415	64,051	3,965
Greenup	1,617	27,147	6,608	1,365	82,444	11,815
Hancock	860	26,481	55	140	58,191	10,220
Hardin	1,485	65,118	490	1,905	215,410	27,204
Harlan	402	5,933	25	870	46,448	1,800
Harrison	5,857	65,774	17,006	1,790	199,570	11,678
Hart	2,348	48,130	691	1,146	125,276	19,382
Henderson	25,987	115,553	484	2,260	299,610	203,623
Henry	315	31,721	30	2,665	97,409	4,955
Hickman	685	42,730	20	1,915	107,595	10,945
Hopkins	1,040	59,835	200	2,060	129,202	72,285
Jackson	51	12,726	-----	1,232	70,715	17,834
Jefferson	2,465	519,110	1,690	55,263	802,970	1,285,550
Jessamine	255	22,540	460	2,290	71,630	29,980
Johnson	1,219	14,871	128	407	87,819	16,784
Kenton	273	282,323	90	425	158,670	407,856
Knott	624	5,973	5	180	58,272	8,267
Knox	354	19,443	75	2,152	112,288	47,540

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Agricultural Products for Taxation after Deducting Value of Crop Grown.					Value of Wagons Carriages, Bicycles and Vehicles of every kind.					Value of Slaughtered Animals					Value of Safes					Value of Household and Kitchen Furniture					Value of Manufacturing Implements, Machinery of all kinds				
		46 47 48					49					50					51					52					53				
Larue	---	1,430	---	---	---	---	39,620	---	---	---	---	---	---	---	---	---	240	---	---	---	---	107,734	---	---	---	---	19,223	---	---	---	---
Laurel	---	321	---	---	---	---	31,367	---	---	---	---	25	---	---	---	---	3,750	---	---	---	---	159,438	---	---	---	39,669	---	---	---	---	---
Lawrence	---	3,819	---	---	---	---	28,858	---	---	---	---	95	---	---	---	---	634	---	---	---	---	138,915	---	---	---	15,769	---	---	---	---	---
Lee	---	201	---	---	---	---	7,069	---	---	---	---	50	---	---	---	---	719	---	---	---	---	70,316	---	---	---	17,583	---	---	---	---	---
Leslie	---	677	---	---	---	---	4,849	---	---	---	---	---	---	---	---	---	279	---	---	---	---	68,658	---	---	---	1,482	---	---	---	---	---
Letcher	---	1,534	---	---	---	---	6,989	---	---	---	---	---	---	---	---	---	643	---	---	---	---	58,566	---	---	---	2,825	---	---	---	---	---
Lewis	---	879	---	---	---	---	34,312	---	---	---	---	45	---	---	---	---	535	---	---	---	---	106,266	---	---	---	14,141	---	---	---	---	---
Lincoln	---	2,438	---	---	---	---	53,268	---	---	---	---	332	---	---	---	---	530	---	---	---	---	206,577	---	---	---	18,617	---	---	---	---	---
Livingston	---	1,490	---	---	---	---	56,969	---	---	---	---	70	---	---	---	---	1,367	---	---	---	---	89,447	---	---	---	21,506	---	---	---	---	---
Logan	---	625	---	---	---	---	60,295	---	---	---	---	---	---	---	---	---	170	---	---	---	---	148,445	---	---	---	21,080	---	---	---	---	---
Lyon	---	175	---	---	---	---	18,377	---	---	---	---	---	---	---	---	---	552	---	---	---	---	41,638	---	---	---	10,932	---	---	---	---	---
Madison	---	250	---	---	---	---	58,570	---	---	---	---	---	---	---	---	---	440	---	---	---	---	142,110	---	---	---	21,700	---	---	---	---	---
Magoffin	---	313	---	---	---	---	11,792	---	---	---	---	---	---	---	---	---	555	---	---	---	---	64,022	---	---	---	13,038	---	---	---	---	---
Marion	---	1,050	---	---	---	---	32,727	---	---	---	---	179	---	---	---	---	1,910	---	---	---	---	65,725	---	---	---	11,284	---	---	---	---	---
Marshall	---	925	---	---	---	---	52,615	---	---	---	---	20	---	---	---	---	4,465	---	---	---	---	93,560	---	---	---	13,045	---	---	---	---	---
Martin	---	20	---	---	---	---	3,116	---	---	---	---	---	---	---	---	---	294	---	---	---	---	45,989	---	---	---	2,071	---	---	---	---	---
Mason	---	---	---	---	---	---	22,150	---	---	---	---	25	---	---	---	---	235	---	---	---	---	34,950	---	---	---	7,095	---	---	---	---	---
McCracken	---	100	---	---	---	---	52,355	---	---	---	---	105	---	---	---	---	5,936	---	---	---	---	158,690	---	---	---	114,495	---	---	---	---	---
McLean	---	765	---	---	---	---	30,525	---	---	---	---	225	---	---	---	---	800	---	---	---	---	68,290	---	---	---	27,125	---	---	---	---	---
Meade	---	725	---	---	---	---	37,689	---	---	---	---	170	---	---	---	---	268	---	---	---	---	99,263	---	---	---	421,870	---	---	---	---	---
Menefee	---	225	---	---	---	---	8,438	---	---	---	---	---	---	---	---	---	80	---	---	---	---	40,389	---	---	---	3,022	---	---	---	---	---
Mercer	---	2,095	---	---	---	---	62,360	---	---	---	---	850	---	---	---	---	715	---	---	---	---	166,948	---	---	---	10,911	---	---	---	---	---
Metcalfe	---	1,198	---	---	---	---	29,120	---	---	---	---	---	---	---	---	---	332	---	---	---	---	72,167	---	---	---	22,967	---	---	---	---	---
Monroe	---	2,325	---	---	---	---	32,045	---	---	---	---	---	---	---	---	---	535	---	---	---	---	97,710	---	---	---	29,135	---	---	---	---	---

Seventeenth Biennial Report Bureau of Agriculture. 743

Montgomery	285	29,580	---	463	997,755	7,525
Morgan	133	24,841	---	315	127,286	15,028
Muhlenberg	2,252	55,139	2,242	1,150	304,226	38,795
Nelson	6,750	49,530	250	2,515	85,255	6,530
Nicholas	70	35,290	50	698	105,070	4,840
Ohio	1,830	76,573	180	4,268	254,011	64,204
Oldham	3,140	26,435	30	35	59,235	655
Owen	130	61,680	2,480	582	139,186	8,259
Owsley	1,003	9,772	120	215	67,495	17,896
Pendleton	940	48,990	15	3,775	134,580	4,890
Perry	30	6,760	---	398	73,958	9,759
Pike	4,355	26,115	1,391	2,979	173,111	37,637
Powell	110	6,634	255	1,865	30,399	24,064
Pulaski	17,921	65,614	1,240	3,346	318,161	68,018
Robertson	---	15,436	---	325	47,376	5,565
Rockcastle	295	16,174	95	302	102,271	21,480
Rowan	300	12,794	---	928	67,817	15,350
Russell	3,313	27,704	722	256	80,424	35,587
Scott	175	47,776	50	285	155,750	1,425
Shelby	360	72,310	---	50	178,070	7,800
Simpson	100	30,187	---	60	68,930	1,355
Spencer	---	18,620	---	450	43,985	5,620
Taylor	35	28,680	---	1,455	78,272	14,482
Todd	295	38,665	175	2,050	105,920	7,080
Trigg	54	38,598	30	1,780	97,040	15,287
Trimble	735	27,040	---	195	61,490	2,285
Union	22,700	49,580	---	380	105,315	9,300
Warren	2,755	73,803	65	2,216	206,346	50,272
Washington	---	34,075	---	275	58,755	7,035
Wayne	1,870	35,791	180	405	111,882	27,728
Webster	65	37,855	180	760	71,260	36,295
Whitley	1,879	32,747	278	6,814	286,819	58,534
Wolfe	776	13,644	50	970	66,760	15,111
Woodford	7,283	74,786	90	1,895	235,490	15,271
Total for 119 Counties	\$342,669	\$5,239,451	\$46,134	\$225,644	\$14,600,280	\$5,706,136

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Piano-forte and other Musical Instruments	Value of Raw Material to be used in Manufacturing	Value of Manufactured Articles	No. of Paintings	Value thereof	Library
	54	55	56	57	58		
Adair	12,539	9,843	650			110	
Allen	4,709	41,455	979			20	
Anderson	6,330		150	4		50	
Ballard	12,353	290	500			25	
Barren	14,196	735	570			55	
Bath	6,085	16,051	24,700				19
Bell	20,410	176,865	64,947			115	
Bloom	15,544			11		150	21
Bourbon	8,095	13,050	6,100			570	
Boyd	35,188	203,703	67,058	75		745	
Boyle	14,570	1,700	3,615	52		883	
Bracken	10,935	4,410	1,250	2		30	
Breathitt	7,826	14,694	17,225	4		100	18
Breckinridge	26,071	36,360	12,550	51		85	39
Bullitt	15,241	4,076	245	5		30	9
Butler	12,615	1,354	88			40	
Caldwell	10,832	375	50				28
Calloway	12,291	4,035	11,140			310	6
Campbell	10,580	56,705	35,325			200	
Carlisle	12,696						
Carroll	9,150	10,150	11,010	5		25	19
Carter	17,512	2,996	4,330	6		325	
Casey	6,094	5,735	7,175				119
Christian	16,545	125,200	14,600			75	

Seventeenth Biennial Report Bureau of Agriculture. 745

Clark	13,110	178,275	64,100	7	415	20
Clay	3,388	75		1	25	25
Clinton	1,782	1,320	85	4	5	21
Crittenden	12,515	185	50	1	70	13
Cumberland	4,419	46,010	1,300	2	100	8
Davies	69,161	119,144	55,030	1	410	10
Edmonson	4,193	140				
Elliot	2,425	68,300	305	26	26	
Estill	3,513	4,558	8,045	1	50	10
Fayette	43,210	176,857	14,309		1,825	
Fleming	16,221	17,006	4,273			
Floyd	6,736	161	14,025	74	135	13
Franklin	21,223	41,600	29,700		1,529	1
Fulton	17,340	12,500	1,525		100	
Gallatin	1,795	1,304			45	
Garrard	10,567	1,035	1,910		35	
Grant	8,251	190	225		100	1
Graves	31,779	16,190	19,725	1	615	18
Grayson	11,565	2,320	1,000	1	500	18
Green	3,365	2,660	150		25	
Greenup	11,609	3,220	1,076	12	310	7
Hancock	9,522	330	1,300		130	25
Hardin	22,951	3,925	3,268	4	150	27
Harlan	2,813			1	35	1
Harrison	18,125	12,140	1,200	15	250	36
Hart	12,929	1,845	1,100	1	30	
Hart	54,034	121,524	39,617	3	230	50
Henderson	4,745	1,205		1	20	1
Henry	19,990	220	610	3	155	32
Hickman	22,620	16,050	16,140	1	300	3
Hickups	3,204	7,652		3	6	9
Holmes	1,272,162	1,565,807	1,016,187		17,305	
Jackson	4,395	14,850	5,000		50	
Jeffers	11,417	2,776	25		75	33
Jefferson	87,595	106,425	62,975		1,100	
Johnson	743	1		5	6	4
Kenton	15,403	13,779	7,730		10	12
Knox						
Knox						

TABLE No 1—Continued.

COUNTRIES	No. of Column in Assessor's Book	Value of Piano-forte and other Musical Instruments		Value of Raw Material to be used in Manufacturing		Value of Manufactured Articles		No. of Paintings		Value		Library	
		54	55	55	56	57	58	57	58	57	58	57	58
Larue		12,866	25	1,080	1	5	17						
Laurel		16,608	6,570	1,140	32	243	71						
Lawrence		14,153	701	187	6	91							
Lee		5,465	14,288	8,950	198	512	20						
Leslie		975											
Letcher		2,415	520	40	169	193	48						
Lewis		11,375	13,990	5,845	5	20	15						
Lincoln		18,551	42,055	376	1	25	8						
Livingston		11,974	2,236	50	12	40	9						
Logan		18,325	6,544	1,725		95							
Lyon		7,401	28,500	7,710	8	45	12						
Madison		15,560	38,060	12,470	8	520	54						
Magoffin		3,864	3,020	60		20	15						
Marion		9,090	47,230	5,125		670							
Marshall		7,355	3,065	200									
Martin		3,657	2,050		8	14	21						
Mason		123,863	80				3						
McCracken		29,563	63,520	41,825	2	225	36						
McLean		8,395	1,125	1,300			12						
Meade		12,984	5,025			5	13						
Menefee		1,798	1,821	12,224	740	1,375	17						
Mercer		11,878			3	75	37						
Metcalfe		4,099	18,441	16,925			15						
Monroe		8,255	21,395	1,575									

Seventeenth Biennial Report Bureau of Agriculture. 747

Montgomery	8,830	3,100	800	131	50	15
Morgan	9,450	356	25	4	340	6
Muhlenberg	25,843	3,457	6,315		80	5
Nelson	13,335	6,255	4,830		340	103
Nicholas	7,615	1,500				68
Ohio	29,737	1,720	10,931	2	50	
Oldham	6,285			24	210	
Owen	7,509	25	10	1	150	17
Owsley	5,141	50,821	6,615			20
Pendleton	10,315	6,185	7,280	2	35	19
Perry	1,630	6				
Pike	14,041	6,101	4,717	461	2,941	
Powell	3,830	54,127	9,405		1,500	20
Pulaski	23,657	28,098	17,500	1	1	8
Robertson	3,405				10	
Rockcastle	6,143	195	4,033	26	81	28
Rowan	6,750	16,592	612			
Russell	4,551	5,881				18
Scott	5,445	5,475			85	
Shelby	19,770	9,800	300		550	
Simpson	6,440	500	500			23
Spencer	1,950	700	200		100	
Taylor	6,180	23,085	390	1	60	
Todd	5,045	3,100	420			26
Trigg	6,965	716	1,300			4
Trimble	4,705	650	285			
Union	21,315	7,685	6,340			
Warren	30,103	11,975	2,170	4	50	52
Washington	4,715	800				
Wayne	7,973	16,175				
Webster	12,910	7,375			100	
Whitley	30,716	26,541	22,560	11	165	12
Wolfe	5,920	22,183	436	288	421	28
Woodford	21,350	40,765	3,200	146	3,091	64
Total for 119 Counties	\$2,924,664	\$3,971,390	\$1,863,365	2 084	\$44,898	1,649

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	No. of Volumes	Value thereof	No. of Diamonds	Value thereof	Value of Watches and Clocks	Value of Jewelry
		58	'8	59	59	60	61
Adair	1,930	2,145	6	1,415	7,179	123	
Allen	639	695		75	5,395	24	
Anderson	1,325	940	6	125	1,355	410	
Ballard	835	1,270	15	719	4,227	322	
Barren	1	3,805	1	1,010	4,716	263	
Bath		1,135	39	2,380	2,443	113	
Bell	6	5,858		1,685	4,227	331	
Boone	800	1,710	23	1,015	6,472	538	
Bourbon		1,585		9,500	2,915	870	
Boyd		10,365	3	4,188	15,915	1,286	
Boyle	6,817	8,688	111	10,800	8,731	1,398	
Bracken	1,102	2,175	4	225	2,733	320	
Breathitt	2,500	2,885	14	880	5,989	230	
Breckinridge	785	3,650	14	1,472	8,345	448	
Bullitt	581	785	24	1,145	11,678	780	
Butler		2,840		195	6,369	171	
Caldwell	654	3,270	5	1,465	7,299	195	
Calloway	602	2,742	1	196	9,664	133	
Campbell		375	1	185	510	200	
Carlisle		1,100		360	3,524		
Carroll		1,905	17	680	4,728	242	
Carter	1,510	2,100		653	4,601	937	
Casey	1,190	1,114	1	20	4,592	92	
Christian		8,340		6,240	2,855	695	

Seventeenth Biennial Report Bureau of Agriculture. 749

Clark	2,725	4,025	4	13,015	9,210	1,105
Clay	412	1,575	9	1,080	5,887	232
Clinton	933	870	2	10	2,734	37
Crittenden	1,366	3,985	5	840	4,165	155
Cumberland	250	485	1	25	2,347	42
Davless	1,006	15,733	23	12,966	16,131	821
Edmonson	197	362		525	4,554	70
Elliott	470	716	1	25	3,179	29
Estill	663	691	4	143	3,751	115
Fayette		13,020		25,530	10,602	6,045
Fleming		3,950		1,345	7,056	320
Floyd	1,353	3,734	2	945	6,498	273
Franklin	2,630	10,445	100	7,362	7,930	1,105
Fulton	150	1,670	8	2,095	5,155	140
Gallatin		170	8	200	1,202	175
Garrard		1,675		1,960	4,880	215
Grant	100	925	11	655	6,030	302
Graves	3,701	6,728	43	4,055	11,379	364
Grayson	62	2,285	1	735	3,235	160
Green		1,100		1,100	1,913	95
Greenup	625	1,505	2	215	4,898	684
Hancock	35	1,370			2,066	358
Hardin	5,869	6,160	10	747	5,862	693
Harlan	130	1,646			2,975	39
Harrison	4,300	3,820	29	2,775	14,522	780
Hart		2,901		860	7,851	372
Henderson		13,405	72	6,118	10,384	1,125
Henry		900	1	115	525	290
Hickman	1,224	3,305	6	800	4,892	261
Hopkins	200	3,685	18	2,735	6,334	755
Jackson	507	356			3,897	
Jefferson		57,385		36,585	40,529	24,523
Jessamine		1,480	19	1,185	930	220
Johnson	1,845	2,005	31	211	6,615	773
Keaton		3,700		4,125	3,510	14,325
Knott	1,147	1,434			3,208	37
Knox		6,295	8	854	7,332	363

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	No. of Volumes	Value	No. of Diamonds	Value	Value of Watches and Clocks	Value of Jewelry
		58	58	59	59	60	61
Larue	1,510		980	29	1,230	3,121	61
Laurel	4,381		5,813	6	1,375	9,528	854
Lawrence	100		3,915	4	920	12,086	565
Lee	601		2,208			5,516	383
Leslie	561		1,365			3,138	43
Letcher	875		1,458			3,377	23
Lewis	500		1,235		150	4,775	285
Lincoln	932		2,585	2	6,002	8,941	641
Livingston	625		1,880	9	455	6,354	510
Logan	3,325		5,550	11	1,590	4,660	75
Lyon	1,995		1,210	7	360	1,984	210
Madison			5,020		6,330	6,380	930
Magoffin	1,579		2,227	1	26	3,933	57
Marion			2,045		1,313	3,258	325
Marshall			2,280	4	325	3,570	50
Martin	210		1,158	4	55	2,941	23
Mason			175	7	175	1,120	95
McCracken	737		8,170	132	12,595	5,016	405
McLean			1,465			1,100	190
Meade	362		645	3	115	7,170	236
Menefee	532		462	1	10	3,109	71
Mercer	325		2,827	45	2,800	5,887	135
Metcalfe	340		1,085			4,104	42
Monroe	325		865	3	145	2,355	50

Seventeenth Biennial Report Bureau of Agriculture. 751

Montgomery	1,060	6,400	99	4,665	3,960	180
Morgan	1,077	2,145	1	25	7,492	119
Muhlenberg	560	2,705	5	360	10,454	668
Nelson	1,850	4,705	39	3,665	5,515	900
Nicholas	2,285	1,320	28	1,355	1,124	22
Ohio	---	3,995	10	390	9,662	197
Oldham	---	1,570	7	1,665	3,041	240
Owen	130	2,135	5	225	3,964	213
Owsley	1,332	1,035	---	---	3,446	36
Pendleton	2,115	2,025	11	795	4,190	80
Perry	230	1,805	---	---	3,751	132
Pike	3,292	6,483	4	479	15,389	774
Powell	---	453	---	25	2,381	69
Pulaski	3,473	7,342	---	1,646	23,085	1,197
Robertson	---	50	---	---	---	469
Rockcastle	786	1,412	3	93	3,498	246
Rowan	---	1,690	---	1,055	4,977	126
Russell	378	1,160	---	---	4,405	72
Scott	100	1,775	2	6,345	4,576	1,021
Shelby	---	2,290	---	6,300	6,950	20
Simpson	---	1,245	12	750	2,693	110
Spencer	---	730	---	100	455	---
Taylor	608	620	1	295	2,434	125
Todd	1,095	2,230	26	1,855	1,955	440
Trigg	450	1,216	13	990	4,064	152
Trimble	---	370	---	25	1,490	45
Union	---	2,660	---	1,235	2,975	160
Warren	---	8,900	165	9,940	12,027	1,307
Washington	58	1,505	12	335	1,335	20
Wayne	---	3,500	3	250	7,590	184
Webster	---	1,765	1	1,750	2,665	285
Whitley	50	9,831	10	2,073	20,202	645
Wolfe	2,740	2,839	2	120	5,075	82
Woodford	485	8,500	---	12,265	12,277	2,068
Total for 119 Counties	97,156	\$411,992	1,520	274,576	693,149	86,184

TABLE No. 1—Continued.

COUNTIES						
No. of Column in Assessor's Book	Value of Gold, Silver and Plated Ware	Value of Steam Engines, including Boilers	No. of Steamboats, or other Water Crafts, or interest therein.	Value	Value of Mineral Products	Value of Coal Mines, Oil, Gas and Salt Wells.
	62	63	64	64	65	66
Adair	1,075	15,763				
Allen	510	11,125		175		
Anderson	395	3,250		150		
Ballard	664	12,290	5	1,803		300
Barren	347	19,610		25		53,520
Bath	1,628	23,075				16,100
Bell	4,351	64,810			1,000	
Boone	2,427	4,200		7,500		
Bourbon	3,840	7,950				
Boyd	2,875	67,210		11,662	20	1,600
Boyle	8,213	23,950				
Bracken	1,185	4,150		1,630		
Breathitt	195	24,380	3	50	100	500
Breckinridge	1,456	16,415	8	1,383		
Bullitt	2,172	9,155				15
Butler	725	19,770		12,692	125	75
Caldwell	639	9,455				
Calloway	186	12,860		88		
Campbell	1,475	118,375		925	2,425	
Carlisle	20	13,050				
Carroll	1,085	4,375	10	5,910		
Carter	334	14,314				525
Casey	486	17,085		550		
Christian	1,260	61,710				

Clark	5,345	9,465	2	9,000	925	1,360
Clay	688	10,002		20	520	2,600
Clinton	45	5,150			7,000	
Crittenden	290	14,485			50	
Cumberland	231	10,305	1	770	20	12,050
Davies	4,486	31,275	4	5,125		
Edmonson		9,160		5		
Elliott	508	11,775		50		6
Estill	98	8,890	9	2,800	7,346	25
Fayette	13,100	35,955	1	25	1,500	
Fleming	3,391	15,260				
Floyd	1,669	29,845			1,005	4,200
Franklin	6,076	5,900		3,580	800	
Franklin	490	10,230		790		
Gallatin	373	1,550	2	800	1,350	
Garrard	1,855	7,320		200		
Grant	593	2,110				
Graves	755	10,835				
Grayson	655	14,800	1	5		
Green	400	7,185		550	1,005	
Greenup	547	13,670	2	3,153	3,685	2,350
Hancock	517	10,375		9,050	25	150
Hardin	1,604	10,675		200		
Harlan	59	6,250				
Harrison	4,181	13,045		500	100	100
Hart	701	10,345		17,059	17,677	48,170
Henderson	6,086	29,455	56	475		
Henry	640	2,740		120		
Hickman	457	14,610	4	200	860	100
Hopkins	1,250	86,695				
Jackson	100	7,275				
Jefferson	34,430	275,265		106,270	56,905	
Jessamine	640	9,200	2	3,500	800	
Johnson	931	19,915	3	350	500	7,915
Kenton	2,625	6,200		200		500
Knoft	18	7,615			48,550	
Knox	475	34,600			3,000	58,835

754 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Gold, Silver and Plated Ware -----					Value of Steam Engines, including Boilers -----					No. of Steamboats, or other Water Craft, or interest therein					Value -----					Value of Mineral Products -----					Value of Coal Mines, Oil, Gas and Salt Well				
		62	63	64	65	66	62	63	64	65	66	62	63	64	65	66	62	63	64	65	66	62	63	64	65	66	62	63	64	65	66
Larue	373	373	6,435	17	9	3,515	373	6,435	17	9	3,515	17	9	3,515	48	3,515	373	6,435	17	9	3,515	17	9	3,515	48	3,515	373	6,435	17	9	3,515
Laurel	771	771	31,100	4	1,867	805	771	31,100	4	1,867	805	4	1,867	805	329	805	771	31,100	4	1,867	805	4	1,867	805	329	805	771	31,100	4	1,867	805
Lawrence	1,584	1,584	19,675	17	2,093	50	1,584	19,675	17	2,093	50	17	2,093	50	749	50	1,584	19,675	17	2,093	50	17	2,093	50	749	50	1,584	19,675	17	2,093	50
Lee	147	147	22,090	14	3,482		147	22,090	14	3,482			3,482		900		147	22,090	14	3,482			3,482		900		147	22,090	14	3,482	
Leslie	22	22	6,455	1	4,850		22	6,455	1	4,850			4,850				22	6,455	1	4,850			4,850				22	6,455	1	4,850	
Letcher	137	137	10,020	31	75		137	10,020	31	75			75		25		137	10,020	31	75			75		25		137	10,020	31	75	
Lewis	302	302	11,723		720		302	11,723		720			720		94		302	11,723		720			720		94		302	11,723		720	
Lincoln	11,180	11,180	11,180		400		11,180	11,180		400			400				11,180	11,180		400			400				11,180	11,180		400	
Livingston	4,774	4,774	15,855		690		4,774	15,855		690			690				4,774	15,855		690			690				4,774	15,855		690	
Logan	495	495	13,220	6	3,000		495	13,220	6	3,000			3,000				495	13,220	6	3,000			3,000				495	13,220	6	3,000	
Lyon	344	344	9,450	10	20,000		344	9,450	10	20,000			20,000				344	9,450	10	20,000			20,000				344	9,450	10	20,000	
Madison	4,480	4,480	3,940	5	1,905		4,480	3,940	5	1,905			1,905				4,480	3,940	5	1,905			1,905				4,480	3,940	5	1,905	
Magoffin	70	70	13,575	4	2,983		70	13,575	4	2,983			2,983		50		70	13,575	4	2,983			2,983		50		70	13,575	4	2,983	
Marion	640	640	11,795		500		640	11,795		500			500				640	11,795		500			500				640	11,795		500	
Marshall	50	50	15,135				50	15,135									50	15,135									50	15,135			
Martin	45	45	4,450				45	4,450									45	4,450									45	4,450			
Mason	1,355	1,355	2,845				1,355	2,845									1,355	2,845									1,355	2,845			
McCracken	1,580	1,580	7,475				1,580	7,475									1,580	7,475									1,580	7,475			
McLean	100	100	14,025				100	14,025									100	14,025									100	14,025			
Meade	676	676	10,340				676	10,340									676	10,340									676	10,340			
Menefee	290	290	7,985				290	7,985									290	7,985									290	7,985			
Mercer	2,227	2,227	10,125				2,227	10,125									2,227	10,125									2,227	10,125			
Metcalfe	77	77	10,264				77	10,264									77	10,264									77	10,264			
Monroe	75	75	22,150				75	22,150									75	22,150									75	22,150			

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Patent Rights of Territory in which to sell same.	Present Value of Annuities and Royalties -----	Value of Brick, Stone and other Building Material	Value of Wines, Whiskies, Brandies and Mixtures thereof not in Distillery Bonded Warehouse -----	No. of Stores -----	Value of Stock of Goods and other property contained therein -----
	67	68	69	70	71	71	
Adair -----	24	-----	1,183	-----	107	115,224	
Allen -----	5	-----	-----	-----	73	89,841	
Anderson -----	-----	-----	8,500	32,736	34	78,155	
Ballard -----	-----	-----	25	2,540	16	93,630	
Barren -----	5	-----	1,650	1,800	17	258,651	
Bath -----	-----	27,700	600	-----	86	96,400	
Bell -----	569	600	3,963	4,540	119	187,717	
Boone -----	-----	60	3,000	75	53	67,800	
Bourbon -----	-----	-----	100	14,280	-----	300,950	
Boyd -----	150	-----	6,710	5,800	230	402,438	
Boyle -----	5	600	-----	-----	100	268,650	
Bracken -----	-----	20	-----	450	73	101,320	
Breathitt -----	-----	60	100	1,000	112	112,722	
Breckinridge -----	-----	-----	2,000	250	144	171,292	
Bullitt -----	5	-----	75	-----	58	73,975	
Butler -----	-----	-----	1,539	50	-----	121,433	
Caldwell -----	-----	-----	2,641	-----	93	118,900	
Calloway -----	18	-----	10,380	50	93	143,863	
Campbell -----	-----	-----	9,400	5,000	82	138,275	
Carlisle -----	-----	-----	1,000	-----	-----	92,675	
Carroll -----	-----	-----	415	5,682	67	77,945	
Carter -----	-----	-----	25	-----	127	123,163	
Casey -----	100	-----	90	-----	93	82,790	
Christian -----	-----	-----	5,000	10,450	231	346,060	

Seventeenth Biennial Report Bureau of Agriculture. 757

Clark	5,000	60	100	---	---	135	197,305
Clay	---	---	---	---	---	85	88,323
Clinton	---	---	220	---	50	39	47,060
Crittenden	---	---	2,000	---	1,000	78	96,440
Cumberland	---	---	---	---	90	38	50,350
Davies	100	1,020	13,050	---	4,510	339	504,526
Edmonson	---	---	100	---	190	1	49,365
Elliott	---	---	853	---	200	70	50,340
Estill	---	---	---	---	---	64	57,960
Fayette	---	1,500	5,300	---	23,780	---	1,122,890
Fleming	---	---	---	---	---	112	131,489
Floyd	---	---	875	---	---	114	116,440
Franklin	---	---	27	---	39,242	198	245,430
Fulton	---	---	3,325	---	---	129	232,220
Gallatin	---	---	500	---	100	32	32,384
Garrard	---	---	---	---	---	---	138,285
Grant	---	---	---	---	---	84	84,180
Graves	---	---	10,000	---	270	151	321,189
Grayson	---	---	260	---	---	100	156,550
Green	---	50	90	---	250	57	48,640
Greenup	---	---	2,995	---	1,600	84	87,715
Hancock	---	---	300	---	---	62	73,910
Hardin	---	---	3,300	---	125	90	191,535
Harlan	---	---	200	---	78	46	54,255
Harrison	---	---	3,750	---	5,910	138	162,340
Hart	50	---	6,000	---	---	71	139,900
Henderson	2,700	50	715	---	2,465	273	317,729
Henry	---	---	---	---	---	---	158,980
Hickman	---	200	20	---	---	77	112,850
Hopkins	75	---	1,000	---	6,975	214	286,870
Jackson	---	---	---	---	---	66	44,405
Jefferson	50	500	18,390	---	308,455	---	5,896,877
Jessamine	---	---	---	---	5,390	104	110,080
Johnson	---	710	5,941	---	80	80	110,613
Kenton	1,300	---	---	---	7,500	23	553,875
Knox	---	---	50	---	150	---	42,647
Knox	---	400	2,100	---	---	125	157,865

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	67	68	69	70	71	No. of Stores	Value of Stock of Goods and other property contained therein
Laurel	---	---	---	224	3,830	97,640	65	---
Laurel	---	---	---	10,340	---	155,196	137	---
Lawrence	---	---	25	850	150	164,469	4	---
Lee	---	---	823	33	812	68,099	67	---
Leslie	---	---	10,734	76	---	45,469	56	---
Letcher	---	---	227	1,365	---	69,340	61	---
Lewis	---	---	---	1,550	700	84,810	137	---
Lincoln	30	---	---	3,550	1,515	151,203	147	---
Livingston	---	---	---	325	---	403,310	64	---
Logan	---	---	---	20	500	171,903	143	---
Lyon	---	---	50	3,810	1,100	59,575	51	---
Madison	---	---	---	500	11,250	257,610	153	---
Magoffin	100	---	---	171	---	46,090	80	---
Marion	10	---	---	200	2,720	136,460	103	---
Marshall	---	---	---	6,020	---	103,995	103	---
Martin	264	---	4,636	45	---	30,040	39	---
Mason	---	---	---	---	---	267,170	207	---
McCracken	---	---	---	11,500	31,929	932,015	394	---
McLean	---	---	---	1,000	---	100,000	87	---
Meade	---	---	---	475	1,600	81,912	45	---
Menefee	---	---	210	---	---	35,700	38	---
Mercer	---	---	---	---	---	204,735	127	---
Metcalfe	---	---	---	35	640	69,795	63	---
Monroe	---	---	---	26,230	125	129,850	70	---

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book.	Value of Property held for another for the purpose of sale on Commission or, otherwise	Miscellany. Value of All Property not mentioned above..	Total Assessed Value of Personal Property, not subject to, Equalization	Total Assessed Value of Lands...	Per Ct. Added.....	Per Ct. Deducted....
		72	73	A	B	C	D
Adair	-----	2,571	7,928	573,273	1,396,287	-----	-----
Allen	-----	-----	18,103	266,254	1,156,826	-----	-----
Anderson	-----	170	26,236	313,186	1,584,270	-----	-----
Ballard	-----	4,030	24,550	244,523	1,691,373	-----	-----
Barren	-----	70	62,384	556,779	2,552,971	-----	-----
Bath	-----	-----	102,486	476,458	2,704,736	12	-----
Bell	-----	3,325	112,308	279,284	1,619,443	-----	-----
Boone	-----	1,950	172,665	856,817	4,469,522	-----	-----
Bourbon	-----	-----	39,515	1,259,760	9,665,295	-----	-----
Boyd	-----	34,187	150,772	1,358,918	1,193,571	-----	-----
Boyle	-----	4,200	66,403	1,650,846	3,844,682	-----	-----
Bracken	-----	20	14,077	278,011	2,097,455	10	-----
Breathitt	-----	200	31,577	182,601	1,286,699	-----	-----
Breckinridge	-----	101	32,683	714,396	2,206,165	-----	-----
Bullitt	-----	785	36,620	431,403	1,695,516	-----	-----
Butler	-----	4,765	22,942	399,917	1,412,604	10	-----
Caldwell	-----	7,580	16,964	316,599	1,633,230	-----	-----
Calloway	-----	2,530	20,778	543,550	2,297,482	-----	-----
Campbell	-----	5,875	590,065	420,064	4,304,104	5	-----
Carlisle	-----	725	13,588	233,596	1,504,703	-----	-----
Carroll	-----	-----	83,434	245,211	1,580,761	-----	-----
Carter	-----	800	61,070	212,353	1,228,639	-----	-----
Casey	-----	1,111	3,694	218,652	1,322,449	-----	-----
Christian	-----	-----	253,350	944,605	5,334,925	-----	-----

Clark	750	116,790	1,281,495	5,749,205	
Clay	24	44,575	216,272	1,331,281	
Clinton		28,766	156,780	709,065	
Crittenden	1,525	24,650	479,325	1,654,765	
Cumberland		47,980	209,836	1,009,073	
Davies	50	762,930	1,668,586	5,822,410	
Edmonson	82	27,143	173,269	1,025,143	
Elliot	7	14,909	81,040	613,151	
Estill		10,832	149,850	884,610	
Fayette	6,231	935,226	3,480,671	13,178,211	
Fleming	14,100	10,845	772,040	3,449,998	
Floyd	75	175,299	260,544	1,880,102	
Franklin	300	131,712	1,063,845	2,777,227	
Fulton	250	42,248	633,673	1,973,630	
Gallatin		6,973	144,353	880,422	5
Garrard		16,245	749,835	3,527,188	
Grant	1,920	27,889	374,035	2,222,065	6
Graves	2,037	468,971	1,254,357	4,312,917	
Grayson	460	20,966	292,114	1,277,710	
Green	10	5,880	189,562	859,053	
Greenup		8,078	265,988	1,197,891	2
Hancock	1,540	14,945	126,870	1,177,824	5
Hardin	575	114,262	670,169	2,932,613	
Harlan	1,460	2,351	607,996	2,636,879	
Harrison		25,327	661,129	4,693,968	
Hart	80	16,841	595,156	1,732,473	10
Henderson	5,490	154,655	1,153,591	5,329,902	
Henry		12,425	670,316	3,018,982	15
Hickman		23,635	750,623	2,349,087	5
Hopkins	300	111,323	986,633	2,761,035	
Jackson	7,460	5,174	147,795	999,943	
Jefferson		8,887,811	16,630,806	12,438,185	
Jessamine	16,275	21,080	512,815	4,206,554	
Johnson	1,800	23,750	303,939	1,266,644	
Johnson	1,255	551,414	4,608,981	4,089,160	
Kenton	7,000	30,443	158,637	1,401,814	
Knox		60,958	396,174	1,816,945	

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Value of Property held for another for the purpose of sale on Commission or otherwise		Miscellany.Value of All Property not mentioned above...	Total Assessed Value of Personal Property, not subject to Equalization	Per Ct. Deducted...	Per Ct. Added.....	Total Assessed Value of Lands...	D
		72	73						
Larue	---	---	27,628	336,484	1,719,147	---	---	---	---
Laurel	---	695	58,288	352,534	1,264,527	---	---	---	---
Lawrence	---	1,231	144,387	263,585	1,435,321	---	---	---	---
Lee	---	1,025	37,516	129,012	523,610	8	---	---	---
Leslie	---	5	28,220	170,550	1,173,909	---	---	---	---
Letcher	---	26	68,491	175,872	1,547,155	---	---	---	---
Lewis	---	840	7,018	205,296	1,585,359	5	---	---	---
Lincoln	---	28,350	28,784	675,406	3,882,351	---	---	---	---
Livingston	---	---	22,650	371,114	1,548,623	---	---	---	---
Logan	---	555	39,560	804,105	3,312,685	---	---	---	---
Lyon	---	---	26,121	161,855	902,030	---	---	---	---
Madison	---	---	55,390	1,089,570	6,375,800	---	---	---	---
Magoffin	---	30	40,926	153,838	1,023,899	---	---	---	---
Marion	---	3,750	11,929	874,333	2,094,300	---	---	---	---
Marshall	---	250	24,402	371,090	1,571,010	---	---	---	---
Martin	---	162	29,165	58,342	715,941	5	---	---	---
Mason	---	1,515	110,310	819,817	5,648,450	2	---	---	---
McCracken	---	1,175	99,747	517,105	2,363,102	---	---	---	---
McLean	---	1,065	23,410	282,635	1,433,180	---	---	---	---
Meade	---	---	33,590	307,743	1,589,596	---	---	---	---
Menefee	---	---	35,199	61,530	439,819	---	---	---	---
Mercer	---	---	29,501	511,441	4,105,018	---	---	---	---
Metcalfe	---	---	2,045	240,924	997,413	---	---	---	---
Monroe	---	205	11,820	341,021	1,213,460	---	---	---	---

Seventeenth Biennial Report Bureau of Agriculture. 768

Montgomery	50	110,310	609,339	3,380,380	
Morgan		23,585	208,142	1,535,151	
Muhlenberg	639	71,603	433,998	1,874,261	
Nelson	50	28,530	1,393,757	3,765,785	
Nicholas		17,830	584,918	2,650,133	
Ohio	900	226,846	519,582	2,596,085	5
Oldham	7,000	10,445	548,648	2,298,480	
Owen		55,874	203,768	2,333,796	5
Owsley		6,694	115,022	590,328	2
Pendleton		15,870	331,440	2,274,520	10
Perry		21,311	137,796	1,069,405	
Pike	756	100,282	497,817	2,854,785	
Powell	2,414	33,835	191,411	465,482	
Pulaski	1,035	182,625	479,809	2,458,874	
Robertson	9,820	1,327	89,269	751,354	
Rockcastle	100	22,034	164,890	820,374	
Rowan	6	97,815	171,404	569,466	
Russell	1,037	8,173	289,739	869,728	
Scott	6,020	53,575	782,253	5,975,482	2
Shelby		62,350	1,436,830	7,296,108	
Simpson	100	20,620	483,707	1,526,806	10
Spencer	3,000	8,560	357,458	1,482,586	
Taylor		20,067	239,414	818,465	
Todd		4,640	442,255	2,118,015	
Trigg	25,080	10,602	341,738	1,707,504	
Trimble	4,080	12,050	140,095	1,283,415	
Union	100	19,929	901,317	4,993,506	
Warren	53,009	98,789	1,262,404	4,673,294	
Washington		19,995	684,550	2,400,769	
Wayne		244,311	560,698	1,549,533	
Webster	5,850	46,120	508,590	1,795,940	
Whitley	1,107	138,485	876,245	2,022,919	
Wolfe	1,350	73,346	267,486	743,460	5
Woodford	830	35,999	1,576,372	5,983,409	
Total for 119 Counties	\$335,930	\$17,849,987	\$62,565,572	\$296,894,155	

764 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No. 1—Continued.

COUNTIES	No. of Column in Assessor's Book-----	Total Value of Lands....		Total Assessed Value of Town Lots -----		Per Ct. Added.....		Per Ct. Deducted...	Total Equalized Value of Town Lots -----		Total Assessed Value of Personal Property subject to Equalization ---	
		E	F	F	G	H	I		J			
Adair	-----	1,396,287	279,350	279,350	-----	-----	279,350	889,358				
Allen	-----	1,156,826	132,845	132,845	-----	-----	132,845	814,573				
Anderson	-----	1,584,270	425,520	425,520	-----	-----	425,520	647,622				
Ballard	-----	1,691,373	386,505	386,505	-----	-----	386,505	778,961				
Barren	-----	2,552,971	627,912	627,912	-----	-----	627,912	1,082,070				
Bath	-----	3,029,304	377,629	377,629	3	-----	388,957	847,131				
Bell	-----	1,619,443	697,488	697,488	-----	-----	697,488	940,732				
Boone	-----	4,469,522	465,478	465,478	-----	-----	465,478	985,613				
Bourbon	-----	9,665,295	2,291,060	2,291,060	-----	-----	2,291,060	1,363,685				
Boyd	-----	1,193,571	2,812,065	2,812,065	-----	-----	2,812,065	1,750,541				
Boyle	-----	3,844,682	1,813,479	1,813,479	-----	-----	1,813,479	1,032,785				
Bracken	-----	2,307,199	558,085	558,085	5	-----	585,989	502,792				
Breathitt	-----	1,286,699	173,460	173,460	-----	-----	173,460	657,149				
Breckinridge	-----	2,206,165	569,313	569,313	-----	-----	569,313	1,390,200				
Bullitt	-----	1,695,516	288,729	288,729	-----	-----	288,729	704,442				
Butler	-----	1,553,864	200,485	200,485	5	-----	216,809	1,060,610				
Caldwell	-----	1,633,230	599,030	599,030	-----	-----	599,030	776,743				
Calloway	-----	2,297,482	552,019	552,019	-----	-----	552,019	1,270,641				
Campbell	-----	4,304,104	16,518,967	16,518,967	-----	-----	16,518,967	1,368,861				
Carlisle	-----	1,579,938	296,910	296,910	-----	-----	296,910	702,206				
Carroll	-----	1,580,761	810,605	810,605	-----	-----	810,605	633,181				
Carter	-----	1,228,639	247,210	247,210	-----	-----	247,210	787,761				
Casey	-----	1,322,449	76,835	76,835	-----	-----	76,835	735,329				
Christian	-----	5,334,925	2,506,710	2,506,710	-----	-----	2,506,710	1,761,620				

Seventeenth Biennial Report Bureau of Agriculture. 765

Clark	5,749,205	1,927,765	1,927,765	1,592,380
Clay	1,331,281	56,965	56,965	698,481
Clinton	709,065	65,805	65,805	396,486
Crittenden	1,654,765	482,345	482,345	714,880
Cumberland	1,009,073	93,985	93,985	523,261
Davless	5,822,410	5,468,494	5,468,494	3,140,642
Edmonson	1,025,143	68,500	68,500	531,917
Elllott	613,151	14,510	14,510	531,277
Estill	884,610	76,537	76,537	485,208
Fayette	13,178,211	14,579,653	14,579,653	4,510,770
Fleming	3,449,998	587,848	587,848	1,074,001
Floyd	1,880,102	161,957	161,957	871,587
Franklin	2,777,227	2,739,657	2,739,657	1,203,296
Fulton	1,973,630	1,076,305	1,076,305	991,263
Gallatin	924,443	157,228	157,228	155,002
Garrard	3,527,188	481,905	481,905	501,181
Grant	2,355,389	377,835	377,835	789,545
Graves	4,312,917	1,572,828	1,572,828	687,180
Grayson	1,277,710	295,735	295,735	2,544,258
Green	859,053	77,667	77,667	1,004,756
Greenup	1,221,849	389,480	389,480	459,818
Hancock	1,236,715	237,619	237,619	562,005
Hardin	2,932,613	761,784	761,784	492,981
Harlan	2,636,879	106,185	106,185	1,457,042
Harrison	4,693,968	1,396,643	1,396,643	332,835
Hart	1,905,720	280,626	280,626	1,208,015
Henderson	5,329,902	3,701,160	3,701,160	1,979,110
Henry	3,471,829	716,605	716,605	2,245,726
Hickman	2,466,541	390,184	390,184	657,195
Hopkins	2,761,055	1,939,759	1,939,759	810,967
Jackson	999,943	16,110	16,110	1,292,743
Jefferson	12,438,185	107,201,425	107,201,425	506,482
Jessamine	4,206,554	729,390	729,390	23,138,831
Johnson	1,266,644	179,220	179,220	532,705
Kenton	4,068,160	21,982,527	21,982,527	677,940
Knott	1,401,814	17,075	17,075	2,470,686
Knox	1,816,945	386,515	386,515	431,060
				929,394

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Total Equalized Value of Lands....		Total Assessed Value of Town Lots		Per Ct. Added.....		Per Ct. Deducted...		Total Equalized Value of Town Lots		Total Assessed Value of Personal Property subject to Equalization	
		E	F	G	H	I	J						
Laurel	---	1,719,147	247,745	---	---	247,745	760,334	---	---	247,745	---	760,334	---
Laurel	---	1,264,527	316,965	---	---	316,965	978,855	---	---	316,965	---	978,855	---
Lawrence	---	1,435,321	289,875	---	---	289,875	1,048,783	---	---	289,875	---	1,048,783	---
Lee	---	565,499	117,535	---	---	117,535	453,466	---	---	117,535	---	453,466	---
Leslie	---	1,173,909	37,595	---	---	37,595	376,673	---	---	37,595	---	376,673	---
Letcher	---	1,547,155	32,450	---	---	32,450	461,908	---	---	32,450	---	461,908	---
Lewis	---	1,664,627	301,873	5	---	316,965	653,539	---	---	316,965	---	653,539	---
Lincoln	---	3,882,351	605,008	---	---	289,875	1,022,579	---	---	289,875	---	1,022,579	---
Livingston	---	1,548,623	225,419	---	---	117,535	841,772	---	---	117,535	---	841,772	---
Logan	---	3,312,685	833,570	---	---	833,570	1,122,325	---	---	833,570	---	1,122,325	---
Lyon	---	902,030	263,091	---	---	263,091	462,352	---	---	263,091	---	462,352	---
Madison	---	6,375,800	1,597,660	---	---	1,597,660	1,392,990	---	---	1,597,660	---	1,392,990	---
Magnolia	---	1,023,899	47,080	---	---	47,080	547,052	---	---	47,080	---	547,052	---
Marion	---	2,094,300	765,461	---	---	765,461	820,903	---	---	765,461	---	820,903	---
Marshall	---	1,571,010	202,240	---	---	202,240	873,092	---	---	202,240	---	873,092	---
Martin	---	751,738	63,768	---	---	63,768	256,084	---	---	63,768	---	256,084	---
Mason	---	5,761,419	2,473,650	---	---	2,473,650	809,433	---	---	2,473,650	---	809,433	---
McCracken	---	2,363,102	7,006,664	---	---	7,006,664	1,797,389	---	---	7,006,664	---	1,797,389	---
McLean	---	1,433,180	378,810	---	---	378,810	650,220	---	---	378,810	---	650,220	---
Meade	---	1,589,596	141,725	---	---	141,725	1,221,062	---	---	141,725	---	1,221,062	---
Menefee	---	439,819	10,160	---	---	10,160	340,692	---	---	10,160	---	340,692	---
Mercer	---	4,105,018	1,124,615	---	---	1,124,615	1,053,269	---	---	1,124,615	---	1,053,269	---
Metcalf	---	997,413	49,590	---	---	49,590	608,427	---	---	49,590	---	608,427	---
Monroe	---	1,213,460	141,025	---	---	141,025	807,120	---	---	141,025	---	807,120	---

Seventeenth Biennial Report Bureau of Agriculture. 767

Montgomery	3,380,380	1,326,625	---	---	---	876,398
Morgan	1,535,151	92,543	---	---	---	805,832
Muhlenberg	1,874,261	776,906	---	---	---	1,291,330
Nelson	3,765,785	722,130	---	---	---	1,005,598
Nicholas	2,650,133	547,230	---	---	---	674,683
Ohio	2,725,889	697,350	---	---	---	1,818,340
Oldham	2,298,480	420,165	---	---	---	517,080
Owen	2,450,486	398,755	---	---	---	761,534
Owsley	602,135	27,840	---	---	---	445,583
Pendleton	2,501,972	375,140	---	---	---	784,130
Perry	1,069,405	53,377	---	---	---	407,166
Pike	2,854,785	300,840	---	---	---	1,228,520
Powell	465,482	82,208	---	---	---	355,794
Fulaski	2,458,874	1,447,956	---	---	---	1,980,096
Robertson	751,354	52,277	---	---	---	248,724
Rockcastle	820,374	173,970	---	---	---	599,079
Rowan	568,466	169,528	---	---	---	516,436
Russell	869,728	39,441	---	---	---	599,566
Scott	6,094,992	1,589,775	---	---	---	1,017,847
Shelby	7,236,108	1,269,590	---	---	---	1,356,460
Simpson	1,679,487	590,386	---	---	---	568,531
Spencer	1,482,586	142,123	---	---	---	321,780
Taylor	818,465	215,475	---	---	---	584,778
Todd	2,118,015	609,090	---	---	---	718,755
Trigg	1,707,504	311,093	---	---	---	714,609
Trimble	1,283,415	92,085	---	---	---	404,585
Union	4,993,506	1,224,122	---	---	---	1,325,826
Warren	4,673,294	2,887,643	---	---	---	1,762,893
Washington	2,400,769	343,360	---	---	---	579,315
Wayne	1,549,533	475,822	---	---	---	1,342,989
Webster	1,795,940	796,090	---	---	---	869,805
Whitley	2,022,919	851,300	---	---	---	1,660,198
Wolfe	780,633	107,005	---	---	---	786,068
Woodford	5,983,409	1,311,700	---	---	---	1,253,391
Total for 119 Counties	\$299,703,745	\$242,304,034	---	---	---	\$134,860,269

768 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Exemptions		Total Assessed Value of Personal Property after deducting "Exemptions"		Per Cent Added.		Per Ct. Deducted...		Total Equalized Value of Personal Property subject to Equalization....		Grand Total Value of all Property as assessed for taxation.	
		K	L	M	N	O	P						
Adair	491,091	398,767	398,767			398,767	2,647,677						
Allen	459,664	354,909	354,909			354,909	1,910,834						
Anderson	320,890	326,732	326,732			326,732	2,649,703						
Ballard	248,607	530,354	530,354			530,354	2,852,755						
Barren	380,000	702,070	702,070			702,070	4,439,732						
Bath	181,250	685,881	685,881	12		745,786	4,224,704						
Bell	140,598	800,134	800,134			800,134	3,396,349						
Boone	284,892	700,721	700,721			700,721	6,492,538						
Bourbon		1,363,685	1,363,685			1,363,685	14,579,800						
Boyd	421,625	1,328,916	1,328,916			1,328,916	6,693,470						
Boyle	148,500	884,285	884,285			884,285	8,193,292						
Bracken	285,434	217,358	217,358	10		239,093	3,150,908						
Breathitt	379,925	277,224	277,224			277,224	1,919,984						
Breckinridge	651,851	738,349	738,349			738,349	4,228,233						
Bullitt	315,097	389,345	389,345			389,345	2,804,993						
Butler	551,240	500,370	500,370	10		560,307	2,528,376						
Caldwell	418,027	358,716	358,716			358,716	2,907,575						
Calloway	721,324	549,317	549,317			549,317	3,942,368						
Campbell	27,500	1,341,361	1,341,361			1,341,361	22,584,496						
Carlisle	356,979	345,227	345,227	5		362,488	2,380,436						
Carroll	284,859	348,322	348,322			348,322	2,984,899						
Carter	437,458	350,303	350,303			350,303	2,038,505						
Casey	453,904	281,425	281,425			281,425	1,899,361						
Christian	233,250	1,538,370	1,538,370			1,538,370	10,314,610						

Seventeenth Biennial Report Bureau of Agriculture. 769

Clark	231,650	1,360,730	10,319,195
Clay	423,024	275,457	1,879,975
Clinton	220,684	175,402	1,107,052
Crittenden	254,000	460,880	3,077,315
Cumberland	246,008	277,253	2,223,977
Davies	916,665	2,223,977	15,183,467
Edmonson	316,225	215,692	1,482,604
Elliott	282,718	248,559	248,559
Estill	273,926	211,282	1,322,279
Fayette	71,500	4,439,270	35,677,803
Fleming	447,358	626,643	626,643
Floyd	433,137	438,450	5,436,529
Franklin	310,938	892,358	2,741,053
Fulton	331,110	660,153	7,473,087
Gallatin	56,576	103,347	4,343,761
Garrard	197,763	591,782	1,280,429
Grant	369,094	318,086	5,350,710
Graves	1,020,769	1,523,662	3,292,074
Grayson	598,820	405,936	8,663,564
Green	306,956	152,862	2,271,495
Greenup	323,035	238,970	1,271,495
Hancock	217,709	275,272	2,092,329
Hardin	651,656	805,386	1,817,585
Harlan	229,941	102,894	5,169,952
Harrison	566,991	641,924	3,053,954
Hart	566,965	412,145	7,393,664
Henderson	659,500	1,586,226	3,020,400
Henry	219,498	437,697	11,770,879
Hickman	312,732	498,235	4,843,600
Hopkins	407,680	885,063	3,988,129
Jackson	321,655	184,827	6,572,510
Jefferson	655,250	22,483,581	1,348,675
Jessamine	118,240	414,465	158,753,997
Johnson	430,316	247,124	5,863,224
Kenton	-----	2,470,686	1,996,927
Knott	244,426	186,634	33,130,354
Knox	890,108	539,286	1,764,160
			3,138,920

TABLE No 1—Continued.

COUNTIES	No. of Column in Assessor's Book	Exemptions	Total Assessed Value of Personal Property after deducting Exemptions	Per Ct. Added	Per Ct. Deducted	Total Equalized Value of Personal Property subject to Equalisation	Grand Total Value of all Property as assessed for taxation
		K	L	M	N	O	P
Iarue	---	321,564	438,770	---	---	438,770	2,742,146
Laurel	---	492,347	486,508	---	---	486,508	2,420,534
Lawrence	---	552,055	496,728	---	---	496,728	2,487,509
Lee	---	236,636	316,830	8	---	234,176	986,987
Leslie	---	232,734	143,939	---	---	143,939	1,525,993
Letcher	---	259,644	202,264	---	---	202,264	1,957,741
Lewis	---	391,272	262,267	5	---	275,380	2,354,795
Lincoln	---	397,170	825,409	---	---	825,409	5,988,174
Livingston	---	360,463	481,309	---	---	481,309	2,626,465
Logan	---	487,635	634,690	---	---	634,690	5,585,050
Lyon	---	184,694	277,658	---	---	277,658	1,604,634
Madison	---	335,880	1,057,100	---	---	1,057,100	10,120,130
Magoffin	---	372,210	174,842	---	---	174,842	1,399,659
Marion	---	189,500	631,403	---	---	631,403	4,365,497
Marshall	---	483,770	389,312	---	---	389,312	2,533,652
Martin	---	163,794	92,290	5	---	96,905	930,341
Mason	---	106,640	702,813	2	---	716,869	9,644,730
McCracken	---	206,000	1,591,389	---	---	1,591,389	11,478,260
McLeann	---	279,980	370,240	---	---	370,240	2,464,865
Meade	---	328,826	892,236	---	---	892,236	2,931,300
Menefee	---	182,206	158,486	---	---	158,486	669,995
Mercer	---	340,109	713,160	---	---	713,160	6,454,234
Metcalfe	---	337,967	270,460	---	---	270,460	1,558,387
Monroe	---	369,840	437,280	---	---	437,280	2,132,786

Seventeenth Biennial Report Bureau of Agriculture. 771

Montgomery	147,275	729,123	729,123	6,045,467
Morgan	508,210	297,422	297,422	2,133,258
Muhlenberg	722,288	569,042	569,042	3,634,207
Nelson	242,730	762,868	762,868	6,644,540
Nicholas	330,581	344,102	344,102	4,126,383
Ohio	887,635	930,715	930,715	4,743,732
Oldham	162,743	354,337	354,337	3,621,630
Owen	417,740	848,794	848,794	3,280,113
Owsley	245,406	200,178	200,178	933,368
Pendleton	458,330	325,800	325,800	3,304,900
Perry	264,152	143,014	143,014	1,403,592
Pike	595,564	632,956	632,956	4,286,398
Powell	135,483	220,311	220,311	959,412
Pulaski	1,036,385	943,711	943,711	5,330,350
Robertson	169,540	79,184	79,184	972,081
Rockcastle	376,969	222,110	222,110	1,381,344
Rowan	232,851	893,585	893,585	1,192,983
Russell	342,071	257,495	257,495	1,456,403
Scott	284,548	733,299	747,965	9,080,809
Shelby	376,730	979,730	979,730	10,922,258
Simpson	249,165	319,366	351,303	2,930,265
Spencer	170,220	151,560	151,560	2,133,727
Taylor	337,024	247,754	247,754	1,521,108
Todd	297,555	421,200	421,200	3,590,560
Trigg	390,294	324,315	324,315	2,684,650
Trimble	223,845	180,740	180,740	1,696,335
Union	320,715	1,005,111	1,005,111	8,124,036
Warren	446,639	1,316,254	1,316,254	10,139,595
Washington	199,750	379,565	379,565	3,808,244
Wayne	478,885	864,104	864,104	3,450,157
Webster	260,750	609,055	609,055	3,709,675
Whitley	837,456	822,742	822,742	4,573,206
Wolfe	293,065	493,003	517,653	1,610,954
Woodford	812,623	940,768	940,768	9,812,249
Total for 119 Counties	42,186,357	92,673,912	93,238,773	714,427,673

TABLE No 1—Continued.

COUNTIES	Grand Total Value of all property as Eq- ualized for taxation.	Total Amount of Tax
	Q	R
No. of Column in Assessor's Book-----		
Adair -----	2,647,677	13,238 38
Allen -----	1,910,834	9,554 17
Anderson -----	2,649,708	13,248 54
Ballard -----	2,852,755	14,263 78
Barren -----	4,439,732	22,198 66
Bath -----	4,640,505	23,202 52
Bell -----	3,396,349	16,981 75
Boone -----	6,492,538	32,462 69
Bourbon -----	14,579,800	72,899 00
Boyd -----	6,693,470	33,467 35
Boyle -----	8,193,292	40,966 46
Bracken -----	3,410,292	17,051 46
Breathitt -----	1,919,984	9,599 92
Breckinridge -----	4,228,223	21,141 12
Bullitt -----	2,804,993	14,024 96
Butler -----	2,730,897	13,654 49
Caldwell -----	2,907,575	14,537 87
Calloway -----	3,942 368	19,711 84
Campbell -----	22,584,496	112,922 48
Carlisle -----	2,472,932	12,364 66
Carroll -----	2,984,899	14,924 49
Carter -----	2,038,505	10,192 53
Casey -----	1,899,361	9,496 80
Christian -----	10,314,610	51,573 05
Clark -----	10,319,195	51,595 98
Clay -----	1,879,975	9,399 87
Clinton -----	1,107,052	5,535 26
Crittenden -----	3,077,315	15,386 58
Cumberland -----	1,590,147	7,950 73
Daviess -----	15,183,467	75,917 34
Edmonson -----	1,482,604	7,413 02
Elliot -----	957,260	4,786 30
Estill -----	1,322,279	6,611 39
Fayette -----	35,677,805	178,389 02
Fleming -----	5,436,529	27,182 65
Floyd -----	2,741,053	13,705 26
Franklin -----	7,473,087	37,365 44
Fulton -----	4,343,761	21,718 81
Gallatin -----	1,329,371	6,646 85
Garrard -----	5,369,986	26,849 93
Grant -----	3,444,483	17,222 41
Graves -----	8,663,564	43,317 82
Grayson -----	2,271,495	11,357 48
Green -----	1,279,144	6,395 72

TABLE No 1—Continued.

COUNTRIES	Grand Total Value of all property as equalized for tax ation.....	Total Amount of Tax.....
No. of Column in Assessor's Book.....	Q	R
Greenup	2,121,066	10,605 33
Hancock	1,890,240	9,451 20
Hardin	5,169,952	25,849 76
Harlan	3,053,954	15,269 77
Harrison	7,393,664	36,968 32
Hart	3,234,861	16,174 30
Henderson	11,770,879	58,854 39
Henry	5,362,102	26,810 51
Hickman	4,130,495	20,652.48
Hopkins	6,572,510	32,862 55
Jackson	1,348,675	6,743 38
Jefferson	158,753,997	793,769 98
Jessamine	5,892,400	29,462 00
Johnson	1,996,927	9,984 64
Kenton	33,130,354	165,651 77
Knott	1,764,160	8,820 80
Knox	3,138,920	15,694 60
Larue	2,742,146	13,710 73
Laurel	2,420,534	12,102 67
Lawrence	2,487,509	12,437 54
Lee	1,043,222	5,231 11
Leslie	1,525,993	7,629 97
Letcher	1,957,741	9,788 70
Lewis	2,462,270	12,311 35
Lincoln	5,988,174	29,940 87
Livingston	2,626,465	13,132 33
Logan	5,585,050	27,925 25
Lyon	1,604,634	8,023 17
Madison	10,120,130	50,600 65
Magoffin	1,399,659	6,998 29
Marion	4,365,497	21,827 49
Marshall	2,533,652	12,668 26
Martin	970,753	4,853 76
Mason	9,771,755	48,858 78
McCracken	11,478,260	57,391 30
McLean	2,464,865	12,324 32
Meade	2,931,300	14,656 50
Menefee	669,995	3,349 97
Mercer	6,454,234	32,271 17
Metcalfe	1,558,387	7,791 94
Monroe	2,132,786	10,663 93
Montgomery	6,045,467	30,227 33
Morgan	2,133,258	10,666 29
Muhlenberg	3,654,207	18,271 04
Nelson	6,644,540	33,222 70
Nicholas	4,126,383	20,631 91

774 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No 1—Continued.

COUNTIES	Grand Total Value of all Property as Equi- valized for Taxation.	Total Amount of Tax.
	Q	R
No. of Column in Assessor's Book -----		
Ohio -----	4,920,072	24,600 36
Oldham -----	3,621,630	18,108 15
Owen -----	3,453,869	17,269 34
Owsley -----	949,179	4,745 89
Pendleton -----	3,566,932	17,834 66
Perry -----	1,403,592	7,017 96
Pike -----	4,286,398	21,431 99
Powell -----	959,412	4,797 06
Pulaski -----	5,330,350	26,651 75
Robertson -----	972,084	4,860 42
Rockcastle -----	1,381,344	6,906 72
Rowan -----	1,192,983	5,964 91
Russell -----	1,456,403	7,282 02
Scott -----	9,214,985	46,074 92
Shelby -----	10,922,258	54,611 29
Simpson -----	3,104,883	15,524 42
Spencer -----	2,133,727	10,668 63
Taylor -----	1,521,108	7,605 54
Todd -----	3,590,560	17,952 80
Trigg -----	2,684,650	13,423 25
Trimble -----	1,696,335	8,481 68
Union -----	8,124,056	40,620 28
Warren -----	10,139,595	50,697 97
Washington -----	3,808,244	19,041 22
Wayne -----	3,450,157	17,250 78
Webster -----	3,709,675	18,548 38
Whitley -----	4,573,206	22,866 04
Wolfe -----	1,672,777	8,363 89
Woodford -----	9,812,249	49,061 24
Totals -----	\$717,965,102	\$3,589,825 49

TABLE No. 2.—Showing Number of Acres of Land, Assessed Value of Land, Equalized Value of Land, Average Assessed Value Per Acre, and Average Equalized Value Per Acre, by Counties.

COUNTIES	No. of Acres of Land	Assessed Vlaue of Land	Equalized Value of Land	Average Value per Acre	
				Assessed	Equalized
Adair	231,396	1,396,287	1,396,287	6.03	6.03
Allen	188,959	1,156,826	1,156,826	6.12	6.12
Anderson	123,495	1,584,270	1,584,270	12.82	12.82
Ballard	150,010	1,691,373	1,691,373	11.27	11.27
Barren	296,588	2,552,971	2,552,971	8.61	8.61
Bath	192,633	2,704,736	3,029,304	14.04	15.72
Bell	180,380	1,619,443	1,619,443	8.97	8.97
Boone	152,935	4,469,522	4,469,522	29.22	29.22
Bourbon	182,603	9,665,295	9,665,295	52.93	52.93
Boyd	85,871	1,193,571	1,193,571	13.89	13.89
Boyle	112,543	3,844,682	3,844,682	34.16	34.16
Bracken	125,707	2,097,454	2,307,199	16.68	18.36
Breathitt	302,700	1,286,699	1,286,699	4.25	4.25
Breckinridge	327,680	2,206,165	2,206,165	6.73	6.73
Bullitt	172,522	1,695,516	1,695,516	9.82	9.82
Butler	240,846	1,412,604	1,553,864	5.86	6.45
Caldwell	204,243	1,633,230	1,633,230	8.00	8.00
Calloway	228,313	2,297,482	2,297,482	10.06	10.06
Campbell	91,386	4,304,104	4,304,104	47.00	47.00
Carlisle	114,733	1,504,703	1,579,938	13.03	13.77
Carroll	80,457	1,580,761	1,580,761	19.64	19.64
Carter	211,361	1,228,639	1,228,639	5.76	5.76
Casey	236,562	1,322,449	1,322,449	5.59	5.59
Christian	416,887	5,334,925	5,334,925	12.80	12.80

Seventeenth Biennial Report Bureau of Agriculture. 757

Clark	156,804	5,749,205	36.66	36.66
Clay	238,543	1,331,281	5.58	5.58
Crittenden	120,244	709,065	5.59	5.59
Cumberland	222,194	1,654,765	7.45	7.45
Davless	162,539	1,009,073	6.20	6.20
Edmonson	248,982	5,822,410	23.38	23.38
Elliott	155,884	1,025,143	5.80	5.80
Estill	145,968	613,151	4.20	4.20
Fayette	132,438	884,610	6.68	6.68
Fleming	176,868	13,178,211	74.62	74.62
Floyd	215,752	3,449,998	16.00	16.00
Franklin	310,744	1,880,102	6.05	6.05
Fulton	122,754	2,777,227	22.62	22.62
Gallatin	115,113	1,973,630	17.45	17.45
Garrard	60,745	880,422	14.56	14.56
Grant	138,030	3,527,188	24.10	24.10
Graves	156,067	2,222,065	14.23	14.23
Grayson	323,834	4,312,917	13.32	13.32
Green	294,834	1,277,710	4.29	4.29
Greenup	159,295	859,053	4.86	4.86
Hancock	185,120	1,197,891	6.47	6.47
Hardin	110,190	1,177,824	10.69	10.69
Harlan	352,799	2,932,613	8.34	8.34
Harrison	330,295	2,636,879	7.98	7.98
Hart	184,293	4,693,968	25.53	25.53
Henderson	224,407	1,732,473	7.72	7.72
Henry	278,488	5,329,902	19.14	19.14
Hickman	193,520	3,471,829	15.60	15.60
Hopkins	149,200	2,349,087	15.75	15.75
Jackson	332,853	2,761,055	8.29	8.29
Jefferson	195,412	999,943	5.11	5.11
Jessamine	218,108	12,438,185	57.03	57.03
Johnson	117,283	4,206,554	35.86	35.86
Jonton	192,097	1,266,644	6.51	6.51
Kenton	97,705	4,068,160	42.56	42.56
Knox	312,074	1,401,814	4.49	4.49
Knox	197,940	1,816,945	9.18	9.18

TABLE No. 2—Continued.

COUNTIES	No. of Land	Acres of Land	Assessed Value of Land	Equalized Value of Land	Value per Acre....	
					Average	Equalized
Iaue	153,590		1,719,147	1,719,147	11.19	11.19
Laurel	263,733		1,264,527	1,264,527	4.79	4.79
Lawrence	300,886		1,435,321	1,435,321	4.77	4.77
Lee	133,575		523,610	561,499	3.92	4.24
Leslie	269,251		1,173,909	1,173,909	4.35	4.35
Letcher	270,573		1,547,155	1,547,155	5.70	5.70
Lewis	304,238		1,585,359	1,664,627	5.21	5.48
Lincoln	195,994		3,882,351	3,882,351	18.81	18.81
Livingston	188,762		1,548,623	1,548,623	8.20	8.20
Logan	329,927		3,312,685	3,312,685	10.04	10.04
Lyon	142,209		902,030	902,030	6.34	6.34
Madison	254,704		6,375,800	6,375,800	25.03	25.03
Magoffin	220,168		1,023,899	1,023,899	4.65	4.65
Marion	196,059		2,094,300	2,094,300	10.68	10.68
Marshall	205,241		1,571,010	1,571,010	7.65	7.65
Martin	116,651		715,941	751,738	6.14	6.45
Mason	147,294		5,648,450	5,761,419	38.35	39.12
McCracken	148,868		2,363,102	2,363,102	15.87	15.87
McLean	145,723		1,433,180	1,433,180	9.83	9.83
Meade	192,531		1,589,596	1,589,596	8.25	8.25
Menefee	122,665		439,819	439,819	3.57	3.57
Mercer	153,407		4,105,018	4,105,018	26.75	26.75
Metalfe	169,665		997,413	997,413	5.88	5.88
Monroe	199,751		1,213,460	1,213,460	6.07	6.07

TABLE No. 3.—Showing for 1904 Adult Males. Legal Voters. Enrolled Militia. Children between Six and Twenty Years of Age, Tobacco, Hemp, Hay, Corn, Wheat, Oats, Barley and other Crops, and Acreage of Wheat, Corn, Tobacco, Meadow, and Woodland

COUNTIES	No. of Column in Assessor's Book.	Males over 21 Yrs.	Legal Voters	Enrolled Militia	Children between 6 and 20 Years	No. of Studs, Jacks and Bulls for which Service Fee was Charged	Rate per Season
Adair	3,427	77	78	79	80	81	82
Allen	3,247	161	3,392	2,392	4,253	6	23
Anderson	2,312	3,330	3,330	5	3,793	13	32
Ballard	2,491	2,312	2,312	1,110	2,485	20	
Barren	5,364	2,491	2,491		2,780	27	
Bath	3,386	5,330	5,330				
Bell	3,392	3,392	3,392	2,417	3,665	12	10
Boone	3,459	3,459	3,459		2,011	3	2
Bourbon	2,709	2,709	2,709	1,194	2,107	17	81
Boyd	3,956	3,956					
Boyle	3,166	3,166	1,743		4,141	9	16
Bracken	3,199	3,199	1,841		2,735	7	11
Breathitt	2,618	1,322	1		2,220	25	21
Breckinridge	2,763	2,763			5,116	16	56
Bullitt	4,686	4,686	2,892		5,613	22	50
Butler	2,299	2,299	995		2,408	24	
Caldwell	3,451	3,451			4,747	22	63
Calloway	3,345	3,345	4,097		3,491	65	8
Campbell	3,965	3,965	228		5,138	98	60
Carlisle	2,220	2,220					
Carroll	2,196	2,196	2,220	1,229	2,531		
Carter	3,536	3,536			1,963	15	63
Casey	3,046	3,046			5,251	12	23
Christian	7,436	7,436		1,726	2,223	33	58
			7,436	6,940	5,658	3	31

Seventeenth Biennial Report Bureau of Agriculture. 781

Clark	4,536	2,944	1,606	1,373	3,942	19	46
Clay	2,944	1,606	4		5,103	12	41
Clinton	2,936				3,828	18	70
Crittenden	2,081	2,083		1,373	2,555	15	74
Cumberland	8,272	8,272			8,194	7	26
Davless	1,996	1,623		860	2,732	34	91
Edmonson	1,727	1,808		800	3,210	15	40
Elliot	2,315			108	3,545	4	28
Estill	1,471	14			1,280		
Fayette	3,908	3,908			3,851	17	29
Fleming	3,277	98		661	5,635	10	38
Floyd	2,900	2,900			1,918		
Franklin	2,538	2,538		3	2,402		42
Fulton	1,355	20			1,045	8	
Gallatin	2,811				2,926	38	
Garrard	2,937	118			2,455	23	41
Grant	6,327	1		4	6,264	2	14
Graves	4,479	4,479		1,718	5,712		
Grayson	2,595	837			2,651	5	34
Green	878	44		2	2,998	2	15
Greenup	2,100				2,235	15	25
Hancock	4,753	1,576		4	5,238	8	
Hardin	752	752			1,135	28	
Harlan	3,946	770		36	3,923	39	29
Harrison	3,846	1,940		995	5,969	16	53
Hart	5,861	2			5,349		
Henderson	3,463						
Henry	2,645	2,645		1,660	3,008	4	46
Hickman	7,177	7,281			7,438	24	47
Hopkins	2,022	2,022		1,551	3,402	33	74
Jackson		1,524		300	73,329		
Jackson					1,945		
Jefferson	2,185				4,420	15	23
Jessamine	2,883	230			13,947		
Johnson	9,226	351			3,110	8	20
Johnston	1,547	1,544		1,160	5,537	2	5
Kent	4,279	4,278		1			
Knox							

TABLE No. 3—Continued.

COUNTIES	No. of Columns in Assessor's Book	Males over 21 Yrs.	Legal Voters	Enrolled Militia	Children between 6 and 20 Years	No. of Studs, Jacks and Bulls for which Service was Charged	Rate per Season
	77	78	79	80	81	82	
Larue	2,240	1,632	1,103	2,689	11	35	
Laurel	3,513	3,583	2,677	4,639	37	24	
Lawrence	3,889	3,482	49	5,857	59	25	
Lee	1,919	1,882		2,580	6		
Leslie	1,420	1,440	1,041	2,683	1	9	
Letcher	1,679	1,738	1,333	3,285	1	4	
Lewis	3,604	3,604		3,662	4	21	
Lincoln	3,945	3,945		4,106	35	35	
Livingston	2,641		906	2,664	23	54	
Logan	6,061	6,117	4,889	4,984	26		
Lyon	1,901	69		2,211	12	68	
Madison	5,782	5,782	885	5,321	9	23	
Magoffin	2,336	13	1,156	4,230	44	85	
Marion	3,181			3,744			
Marshall	3,174	3,356		3,836	4	5	
Martin	1,168		6	2,085			
Mason	2,689				7	15	
McCracken	3,427	3,427					
McLean	2,858			3,038	13	77	
Meade	2,244	19	1,347	1,894	16	56	
Menefee	1,309	1,197	132	2,021	12	146	
Mercer	3,106	3,106	1,806	3,005	69	208	
Metcalfe	2,285	2,267	704	2,814	49	65	
Monroe	2,492	2,633	1,376	3,612			

Seventeenth Biennial Report Bureau of Agriculture. 788

Montgomery	2,512	2,512	1,812	2,124	44	108
Morgan	2,919	3,147	1,699	4,879	2	10
Muhlenberg	5,176	39	1,429	5,736	5	35
Nelson	3,255	3,261	---	3,667	40	---
Nicholas	2,854	2,854	---	2,693	21	126
Ohio	6,343	156	---	7,380	---	---
Oldham	---	---	---	---	---	---
Owen	3,465	59	2	3,519	10	36
Owsley	1,565	79	1,256	3,568	8	---
Pendleton	3,046	3,046	1,710	3,679	43	234
Perry	1,831	1,831	1,706	3,191	9	13
Pike	---	---	---	---	---	---
Powell	1,435	---	1,698	6	10	2,500
Pulaski	---	---	---	---	---	---
Robertson	1,115	---	46	1,049	26	125
Rockcastle	2,708	78	2,691	3,990	26	63
Rowan	1,786	1,789	---	2,595	3	7
Russell	2,198	21	1	3,131	5	114
Scott	2,864	2,964	---	2,375	14	68
Shelby	3,992	3,992	---	2,630	16	150
Simpson	2,781	2,781	---	2,379	2	11
Spencer	1,744	---	---	1,828	---	---
Taylor	2,525	2,453	---	3,015	20	103
Todd	3,757	3,757	---	3,072	9	31
Trigg	3,045	2	2,072	3,779	18	---
Trimble	1,695	1,695	---	1,825	---	---
Union	4,144	---	---	---	---	---
Warren	7,247	95	3,549	5,482	29	---
Washington	3,006	---	---	2,665	5	36
Wayne	3,486	---	1,924	4,977	28	82
Webster	4,655	4,655	---	2	---	---
Whitley	5,470	4,813	2,399	8,847	2	10
Wolfe	1,922	813	696	1,498	8	20
Woodford	3,038	3,038	---	2,264	---	---
Total for 119 Counties	\$365,376	\$212,087	\$80,033	\$1,616,545	\$1,757	---

TABLE No. 3—Continued.

COUNTIES	No. of Column in Assessor's Book	Pounds of Tobacco raised during the year	Pounds of Hemp raised during the year	Tons of Hay raised during the year	Bushels of Corn raised during the year	Bushels of Wheat raised during the year	Bushels of Oats raised during the year
	83	84	85	86	87	88	
Adair	698,890		2,823	476,697	37,893	15,961	
Allen	1,775,277	200	2,535	515,478	36,796	115,155	
Anderson	1,251,700		1,516	220,770	30,025	6,676	
Ballard	2,351,859	70,503	2,835	381,178	121,840	190	
Barren							
Bath	1,190,900	20	3,517	99,076	20,746	1,660	
Bell	2,000		370	62,227		902	
Boone	2,102,750		5,218	477,214	50,403	4,722	
Bourbon							
Boyd	672						
Boyle	487,865	967,000	1,087	138,941	6,995	9,519	
Bracken	3,314,420	16	4,702	400,605	218,056	2,176	
Breathitt			8,961	190,386	42,748	581	
Breckinridge	4,909,840	150	349	408,970		600	
Bullitt	235,100		2,919	748,974	101,216	30,692	
Butler	859,500		4,151	469,902	58,457	21,589	
Caldwell	4,636,875	2,211	3,056	733,123	21,448	21,417	
Calloway	2,351,785	7,309	2,170	508,565	79,066	600	
Campbell	71,700	17,700	3,819	181,243	17,213	869	
Carlisle	739,000		7,384	21,800	5,363	1,448	
Carroll	1,847,600		1,143	287,530	124,220		
Carter	1,057,090		1,505	190,695	27,822	1,848	
Casey	500,917	4,905	2,235	35,328	9,432	23,534	
Christian	11,424,300		2,687	495,121	27,085	6,055	
			8,161	462,686	588,280	18,100	

Seventeenth Biennial Report Bureau of Agriculture. 785

Clark	3,672,500	1,218,500	2,388	485,020	115,445	9,600
Clay	4,810		1,737	420,402	319	2,945
Clinton	6,910		1,556	40,711	36,441	6,576
Crittenden	1,950,075		3,361	709,689	30,763	583
Cumberland	137,825		1,314	404,651	19,985	3,151
Davies	7,395,735		6,317	1,058,495	263,357	1,782
Edmonson	208,922	59	815	398,013	16,070	15,949
Elliott	3,182	15	797	325,598	8,063	24,555
Estill	25		937	324,308	360	1,245
Fayette	808,151		3,439	211,480	92,725	2,110
Fleming	2,741,175	344,209	4,183	414,469	67,668	10,270
Floyd	5,545	4	598	521,372	1,135	4,095
Franklin	2,115,950	2,800	1,123	244,030	52,698	5,120
Fulton	392,314	6,057	2,611	586,515	183,974	2,386
Gallatin	1,276,600	750	816	107,276	11,257	3,115
Garrard						
Grant	2,929,780	4,857	2,594	325,688	24,908	1,946
Graves	9,318,900	31	13,226	727,388	76,353	1,440
Grayson	831,470		2,297	787,900	74,870	28,057
Green	1,670,810		1,063	302,929	38,460	7,038
Greenup	303,050	600	1,621	245,366	12,169	6,484
Hancock	2,701,605	420	6,622	403,017	60,558	2,887
Hardin	212,700	2,502	4,196	554,324	207,144	27,785
Harlan		6	104	90,265	90	90
Harrison	4,817,180	4,000	5,947	396,517	101,913	4,245
Hart	2,769,017		1,114	571,815	50,778	17,183
Henderson	6,550,689	9,890	70,952	883,894	196,593	1,184
Henry						
Hickman	1,370,000		3,071	580,232	357,097	2,791
Hopkins	6,455,990		5,135	651,880	53,182	2,280
Jackson	2,353	24	1,182	275,361	1,416	20,241
Jefferson						
Jessamine	991,350	292,020	4,400	227,201	220,345	3,880
Johnson	4,711	5	1,969	279,473	3,126	14,337
Kenton	493,200		2,948	72,649	4,809	9,690
Knott			191	289,780	95	562
Knox	200		2,160	201,168	72	4,496

TABLE No. 3—Continued.

COUNTIES	No. of Column in Assessor's Book	Pounds of Tobacco raised during the year	Pounds of Hemp raised during the year	Tons of Hay raised during the year	Bushels of Corn raised during the year	Bushels of Wheat raised during the year	Bushels of Oats raised during the year
		83	84	85	86	87	88
Larue	---	405,950	---	1,098	430,478	174,671	17,417
Laurel	---	6,979	---	4,873	293,303	4,921	20,580
Lawrence	---	59,633	4,140	1,753	545,530	15,299	21,750
Lee	---	2,006	150	319	191,718	64	6,134
Leslie	---	50	5	384	225,517	---	997
Letcher	---	399	---	485	279,562	35	828
Lewis	---	413,130	3,000	657	75,714	10,518	3,089
Lincoln	---	469,520	1,330,300	7,086	535,289	121,184	28,591
Livingston	---	706,900	12	3,343	714,451	39,502	1,667
Logan	---	6,533,500	---	1,806	910,795	353,595	13,645
Lyon	---	3,024,800	---	1,142	143,075	20,245	4,410
Madison	---	2,017,800	585,300	2,427	720,010	89,260	4,170
Magoffin	---	11,142	55	1,353	422,078	4,305	7,215
Marion	---	---	---	---	---	---	---
Marshall	---	4,577,200	---	2,504	527,485	40,190	---
Martin	---	1,913	---	132	130,125	---	241
Mason	---	4,804,500	---	4,174	512,075	143,647	550
McCracken	---	---	---	---	---	---	---
McLean	---	3,846,600	---	3,524	440,840	74,096	2,186
Meade	---	81,000	---	1,187	371,410	77,132	6,506
Menefee	---	3,325	---	708	183,205	3,844	7,483
Mercer	---	1,573,820	238,500	3,008	495,561	261,417	11,117
Metcalfe	---	756,606	---	1,629	369,380	29,248	31,460
Monroe	---	213,640	---	1,368	449,670	34,429	27,628

Seventeenth Biennial Report Bureau of Agriculture. 787

Montgomery	1,729,500	157,000	1,061	234,780	18,630	220
Morgan	16,878	-----	1,523	480,363	16,676	-----
Muhlenberg	1,801,500	-----	2,860	310,422	35,263	3,089
Nelson	675,905	7,421	5,366	630,878	180,234	22,157
Nicholas	3,909,300	24,000	4,155	338,315	64,564	350
Ohio	3,702,271	-----	6,007	916,833	68,730	15,741
Oldham	-----	-----	-----	-----	-----	-----
Owen	4,183,485	-----	2,500	289,968	31,345	1,266
Owsley	8,000	-----	788	285,099	988	9,280
Pendleton	3,708,400	-----	3,507	310,660	54,505	5,476
Perry	5,045	-----	374	270,371	-----	759
Pike	-----	-----	-----	-----	-----	-----
Powell	3,000	10,162	101,021	171	225	-----
Pulaski	-----	-----	-----	-----	-----	-----
Robertson	1,773,000	-----	993	134,690	20,856	-----
Rockcastle	19,030	3	1,189	273,155	11,304	15,721
Rowan	-----	-----	1,224	184,629	988	8,106
Russell	16,968	2	1,414	420,664	31,092	4,534
Scott	4,480,400	99,205	15,946	390,609	154,795	11,659
Shelby	6,318,000	372,000	5,183	839,830	265,890	14,480
Simpson	1,345,125	-----	341	246,650	171,732	13,215
Spencer	1,267,000	-----	576	296,914	72,487	5,043
Taylor	1,009,236	-----	3,188	413,034	71,454	19,874
Todd	3,758,900	2,130	1,381	376,884	199,970	3,365
Trigg	4,258,425	-----	3,032	591,015	95,343	234
Trimble	2,246,350	-----	813	162,385	45,087	4,380
Union	-----	-----	-----	-----	-----	-----
Warren	2,631,499	4,000	9,849	786,339	138,041	79,151
Washington	2,470,100	-----	1,672	386,525	83,372	13,405
Wayne	2,100	-----	1,803	471,225	55,042	7,789
Webster	58,000	-----	17	4,400	630	-----
Whitley	45	-----	776	127,517	647	1,090
Wolfe	1,380	-----	540	162,385	1,381	7,927
Woodford	3,767,900	166,700	2,190	318,470	346,219	12,150
Total for 119 Counties	\$188,629,919	\$5,962,848	\$462,146	\$41,198,734	\$7,740,044	\$1,024,318

TABLE No. 3—Continued.

COUNTIES	No. of Column in Assessor's Book.	Bushels of Barley raised during the year	Bushels of Grass and Clover Seed raised during the year	Tons of Coal mined during the year	Tons of Pig Metal mined during the year	Tons of Bloom	Tons of Bar Iron
Adair	89	100	4,651	93	94		
Allen	150						
Anderson							
Ballard			105			4,700	
Barren							
Bath	300		250				
Bell							
Boone						67	
Bourbon							
Boyd				4,189			
Boyle			3,028				
Bracken	80						
Breathitt							
Breckinridge	142		190				
Bullitt	10		362				
Butler	50			10			
Caldwell							
Calloway							
Campbell			5			5	
Carlisle							
Carroll							
Carter							
Casey			400				
Christian	1,169		1,959	90,000			

Seventeenth Biennial Report Bureau of Agriculture. 789

Clark	52,500	75				
Clay						
Clinton	640					
Crittenden						
Cumberland	25					
Davies	169	15,500				40
Edmonson	660					
Elliott	174	5				
Estill						
Fayette	5,602					
Fleming						
Floyd		5,484	30		1	
Franklin	2,300					
Fulton						
Gallatin						
Garrard						
Grant						
Graves						
Grayson						
Green	10					
Greenup		9	1,500			5
Hancock						
Hardin						
Harlan						
Harrison	75					
Hart						
Henderson	60	20,000				4
Henry						
Hickman						
Hopkins		138,410				
Jackson						
Jefferson						
Jessamine	64					
Johnson		24,002				
Kenton	700					
Knott						
Knox						

TABLE No. 3—Continued.

COUNTIES	Bushels of Barley raised during the year -----	Bushels of Grass raised during the year -----	Tons of Coal mined during the year -----	Tons of Pig Metal mined during the year -----	Tons of Bloom-----	Tons of Bar Iron
No. of Column in Assessor's Book.-----	89	90	91	92	93	94
Larue -----		100				
Laurel -----	2		2,820			
Lawrence -----			392			
Lee -----			300			1
Leslie -----			105			
Letcher -----		8	262			
Lewis -----	50					
Lincoln -----		1,374				
Livingston -----		10				
Logan -----		431				
Lyon -----						
Madison -----	200	13,725				
Magoffin -----						
Marion -----						
Marshall -----	3,000					
Martin -----						
Mason -----						
McCracken -----						
McLean -----		300				
Meade -----						
Menefee -----			60			
Mercer -----		780				
Metcalfe -----						
Monroe -----						

Montgomery	80	4,711					35
Morgan	40	103					
Muhlenberg	625		291,170				
Neison		1,435					
Nicholas		400					
Ohio		800					
Oldham							
Owen							
Owsley							
Pendleton		88					
Perry			25				
Pike							
Powell							
Pulaski							
Robertson							
Rockcastle			25				
Rowan							
Russell							
Scott	70	960					
Shelby		12,120					
Simpson	210						
Spencer							
Taylor		39					
Todd							
Trigg		5	2,000				
Trimble		259					
Union							
Warren		25					
Washington		27,097					
Wayne		1,580	450				10
Webster							
Whitley			2,400				
Wolfe			50				
Woodford	350	6,710					
Total for 119 Counties	\$10,303	\$147,579	\$595,768	\$2,000	\$4,773		95

792 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No. 3—Continued.

COUNTIES	No. of Column in Assessor's Book.					
	No. of Acres of Wheat raised during the year.-----	No. of Acres of Corn raised during the year.-----	No. of Acres of Meadow -----	No. of Acres of Woodland -----	No. of Acres of Tobacco -----	100
Adair	4,311	23,311	6,316	61,314	981	2,268
Allen	3,712	25,305	4,348	46,920	2,599	1,679
Anderson	2,689	7,266	4,922	5,889	1,556	1,165
Ballard	8,759	12,537	2,604	11,653	2,854	957
Barren	-----	-----	-----	-----	-----	2,893
Bath	1,300	1,809	707	524	895	1,999
Bell	- 20	15,029	894	15,428	-----	1,012
Boone	4,118	13,023	7,916	3,690	-----	1,155
Bourbon	-----	-----	-----	-----	-----	1,583
Boyd	876	6,343	28,358	11,911	42	984
Boyle	16,307	9,503	4,571	5,790	476	1,350
Bracken	4,508	9,899	3,268	1,581	7,170	1,254
Breathitt	-----	23,949	888	193,633	-----	1,845
Breckinridge	-----	44,566	5,197	71,732	6,618	2,240
Bullitt	11,870	17,943	6,905	45,403	275	1,497
Butler	4,777	17,943	6,905	45,403	275	1,497
Butler	2,518	35,268	4,799	70,293	1,452	2,030
Caldwell	6,574	22,420	3,397	36,370	6,061	1,762
Calloway	1,568	13,377	2,259	45,767	3,285	2,029
Campbell	78	200	132	124	16	642
Carlisle	9,339	10,011	1,686	8,330	945	882
Carroll	1,669	6,295	2,241	2,402	2,157	1,013
Carter	1,170	18,650	4,211	44,574	1,513	1,608
Casey	2,899	24,152	4,416	103,433	1,025	2,161
Christian	37,369	57,018	4,571	10,205	11,250	3,791

Seventeenth Biennial Report Bureau of Agriculture. 798

Clark	5,829	10,867	2,627	958	3,135	2,083
Clay	27	24,336	3,287	53,389	-----	1,766
Clinton	4,435	16,004	2,689	42,640	10	947
Crittenden	3,137	32,541	4,186	33,988	2,525	1,600
Cumberland	1,732	15,968	1,710	64,268	163	1,180
Davies	10,200	29,203	7,163	7,742	7,807	3,047
Edmonson	1,381	19,737	1,031	42,055	252	1,037
Elliot	1,171	18,244	1,458	45,966	3	-----
Estill	67	16,110	1,877	44,305	605	1,592
Fayette	12,516	9,636	4,252	609	2,478	1,489
Fleming	5,168	14,077	5,025	11,818	2,821	2,422
Floyd	58	22,684	1,731	99,421	24	1,828
Franklin	3,560	7,165	1,459	1,138	2,506	1,441
Fulton	12,207	13,393	1,810	21,869	1,131	589
Gallatin	922	3,343	972	411	1,397	702
Garrard	-----	-----	-----	-----	-----	1,703
Grant	2,615	8,598	3,808	4,927	3,364	1,411
Graves	9,556	28,948	7,273	33,589	9,373	2,669
Grayson	8,412	43,409	5,127	65,545	901	1,850
Green	3,642	15,417	2,491	20,485	2,876	1,026
Greenup	1,082	11,644	2,796	45,638	949	1,278
Hancock	4,355	17,610	2,294	11,767	3,174	1,092
Hardin	16,142	25,710	3,764	28,805	455	2,236
Harlan	-----	4,713	116	10,778	-----	532
Harrison	7,914	12,876	5,496	2,569	5,049	2,080
Hart	5,185	27,004	1,969	53,521	5,847	2,013
Henderson	9,505	38,103	4,506	8,858	6,553	2,789
Henry	-----	-----	-----	-----	-----	1,722
Hickman	24,345	19,351	7,503	16,214	2,179	1,171
Hopkins	4,740	32,487	8,373	44,243	7,210	3,194
Jackson	220	17,076	3,502	81,180	1	1,337
Jefferson	-----	-----	-----	-----	-----	6,118
Jessamine	12,580	6,332	1,068	1,991	1,136	1,028
Johnson	305	20,090	1,333	46,838	283	1,429
Kenton	357	1,841	10,576	888	493	194
Knott	-----	13,659	277	80,440	-----	1,130
Knox	-----	13,525	4,646	41,147	28	2,181

794 *Seventeenth Biennial Report Bureau of Agriculture.*

TABLE No. 3—Continued.

COUNTRIES.	No. of Column in Assessor's Book.	No. of Acres of					Dogs
		95	96	97	98	99	
		No. of Acres of Wheat raised during the year	No. of Acres of Corn raised during the year	No. of Acres of Meadow	No. of Acres of Wood-land	No. of Acres of Tobacco	
Larue	13,895	19,498	1,812	26,316	538	1,170	
Laurel	605	19,966	11,408	82,641	4	1,810	
Lawrence	2,586	29,847	2,982	58,869	457	2,880	
Lee	270	9,802	1,451	22,781	38	1,024	
Leslie	6	18,958	411	79,977		1,017	
Letcher	549	16,884	595	73,498	498	1,817	
Lewis	7,835	3,262	898	9,160	871	1,764	
Lincoln	8,406	14,094	7,094	11,547	441	2,119	
Livingston	21,974	29,209	5,838	38,521	690	1,506	
Logan	1,687	32,550	3,471	44,247	8,844	3,294	
Lyon	6,350	15,853	2,606	16,454	3,679	1,128	
Madison	599	16,910	2,748	857	2,066	3,231	
Magoffin	3,515	25,554	2,146	64,229	17	1,642	
Marion	3,515	21,941	3,982	33,826	5,513	1,856	
Marshall	3,712	7,863	124	51,278		1,569	
Martin		4,812	2,864	105	2,825	698	
Mason						1,653	
McCracken							
McLean	4,782	19,174	5,477	28,104	4,018	1,807	
Meade	8,012	17,566	1,799	21,886	118	1,571	
Menefee	199	9,359	1,870	18,980	24	1,749	
Mercer	16,658	13,866	4,061	3,887	1,509	1,671	
Metcalf	8,818	19,168	2,886	46,738	2,286	1,408	
Monroe	4,148	28,889	2,050	70,788	281	1,589	

Seventeenth Biennial Report Bureau of Agriculture. 795

Montgomery	1,164	5,851	1,336	81	1,874	1,648
Morgan	853	28,120	2,380	68,178	15	1,076
Muhlenberg	3,284	17,028	5,019	35,455	2,228	2,870
Nelson	10,670	19,293	3,077	29,554	966	2,028
Nicholas	4,483	9,352	3,598	2,790	8,893	1,787
Ohio	6,808	45,878	9,286	65,048	4,929	2,984
Oldham						
Owen	656	5,475	1,495	4,671	2,717	1,837
Owsley	97	18,569	1,977	45,282		960
Pendleton	5,031	12,677	4,817	4,195	4,444	1,606
Perry		15,690	780	79,040		1,081
Pike						
Powell						
Pulaski		4,811	510	22,184	23	901
Robertson	2,012					3,407
Rockcastle	948	4,740	1,759	1,972	2,140	613
Rowan	187	20,385	2,467	74,192	29	1,580
Russell	3,745	11,454	2,598	52,697		889
Scott	8,998	21,986	2,844	46,906	84	1,478
Shelby	18,379	9,709	4,486	2,574	4,274	1,450
Simpson	11,047	21,807	8,359	6,926	6,826	1,904
Spencer	6,093	11,850	591	9,668	1,058	1,835
Taylor	5,728	9,997	587	4,656	1,720	1,125
Todd	18,410	19,880	4,845	40,310	1,368	1,614
Trigg	7,967	17,314	2,615	29,257	5,479	1,648
Trimble	3,268	23,402	3,764	64,681	6,859	1,661
Union		7,288	13,059	19,284	2,720	1,009
Warren	8,829	27,042	22,017	29,297	3,151	1,205
Washington	6,668	20,937	2,938	5,840	2,965	8,171
Wayne	6,124	80,792	3,844	123,009		1,684
Webster	65	151	18	76	69	1,794
Whitley		9,245	1,315	12,628		2,472
Wolfe	545	14,644	2,580	54,580		2,896
Woodford	18,618	9,579	2,169	2,405	4,003	1,182
						1,235
Total for 119 Counties	557,016	1,970,552	408,501	3,611,824	222,545	192,050

STATISTICAL TABLES

Taken from Reports of the

SUPERINTENDENT OF PUBLIC INSTRUCTION.

VALUE OF AIL SCHOOL HOUSES AND GROUNDS.

	1905-1906			1906-1907		
	White	Colored	Total	White	Colored	Total
Adair	12,796	755	13,551	12,796	755	13,551
Allen	20,000	1,000	21,000	30,000	580	30,580
Anderson	19,300	1,200	20,500	21,300	1,200	22,500
Ballard	30,770	515	31,285	31,150	1,040	32,195
Barren	60,200	6,600	66,800	60,900	7,000	67,900
Bath	17,225	1,835	19,060	17,525	2,035	19,560
Bell	18,450	900	19,350	19,100	1,000	20,100
Boone	35,000	300	35,300	35,000	400	36,400
Bourbon	16,125	3,915	20,040	17,325	3,965	21,290
Boyd	18,700		18,700	26,885		26,885
Boyle	31,865	3,520	35,385	32,915	3,416	36,331
Bracken	45,675	806	46,475			25,000
Breathitt	13,372		13,372	18,000		18,000
Breckinridge	25,600	1,000	26,600	26,000	1,000	27,000
Bullitt	15,500	2,500	18,000	22,400	2,500	24,900
Butler	18,000	500	18,500	20,000	700	20,700
Caldwell	21,050	725	21,775	29,722	1,045	30,768
Calloway				27,180	775	27,955
Campbell	40,000		40,000	4,000		4,000
Carlisle	28,000	600	28,600	29,000	600	29,600
Carroll	39,700	1,000	40,700	43,496	1,000	44,496
Carter	25,000		25,000	26,000		26,000
Casey	15,000	1,500	17,000			17,000
Christian	110,831	19,132	129,963	110,831	19,132	129,963
Clark	15,323	1,792	17,115	12,496	1,823	14,319
Clay	9,000	300	9,300	28,300	1,400	29,700
Clinton	9,000	300	9,300	9,000	300	9,300
Crittenden						
Cumberland						
Davies	45,580	2,100	47,680	52,845	2,785	55,630

VALUE OF ALL SCHOOL HOUSES AND GROUNDS.

	1905-1906			1906-1907		
	White	Colored	Total	White	Colored	Total
Lincoln	36,000	2,750	38,750	40,000	2,800	42,800
Livingston	24,300	1,800	26,100	25,000	1,000	26,000
Logan	31,125	2,675	33,800	27,000	2,500	29,500
Lyon	15,000	850	15,850	15,300	850	16,150
Madison	40,000	7,000	47,000	40,800	7,200	48,000
Magoffin	8,115	-----	8,115	11,250	-----	11,250
Marion	14,500	500	15,000	19,500	1,500	21,000
Marshall	30,000	500	30,500	25,000	500	25,500
Martin	13,400	-----	13,400	13,500	-----	13,500
Mason	30,000	3,500	33,500	30,000	3,500	33,500
McCracken	19,235	1,000	20,235	20,835	1,065	21,900
McLean	16,000	800	16,800	16,000	800	16,800
Meade	13,000	550	13,550	18,000	500	18,500
Menefee	7,000	150	7,150	10,000	200	10,200
Mercer	-----	-----	-----	-----	-----	-----
Metcalfe	12,490	885	13,375	12,490	885	13,375
Monroe	32,000	350	32,350	16,000	900	16,900
Montgomery	57,320	4,925	62,245	30,600	6,700	37,300
Morgan	18,000	-----	18,000	26,500	119	26,619
Muhlenberg	25,000	2,300	27,300	26,000	2,600	28,600
Nelson	17,850	3,500	21,350	21,650	2,925	24,575
Nicholas	52,150	450	52,600	45,000	500	45,500
Ohio	22,000	1,100	23,100	25,000	1,000	26,000
Oldham	11,000	1,600	12,600	12,500	2,000	14,500
Owen	60,000	1,600	61,600	56,000	4,000	60,000
Owsley	12,400	200	12,600	12,500	100	12,600
Pendleton	38,000	450	38,450	33,100	500	33,600
Perry	9,370	100	9,470	10,465	200	10,665
Pike	27,633	100	27,733	26,600	200	26,800
Powell	-----	-----	-----	5,590	300	5,890

Seventeenth Biennial Report Bureau of Agriculture. 801

Pulaski	45,000	1,000	46,000	45,000	1,000	46,000
Robertson	5,400	100	5,500			
Rockcastle				25,000	200	25,200
Rowan	9,575		9,575	10,000		10,000
Russell	9,453	325	9,778	10,472	210	10,682
Scott	15,600	1,480	17,080	21,500	1,480	22,980
Shelby	16,900	2,800	19,700	21,600	1,980	23,580
Simpson	8,200	2,400	10,600	3,450	550	4,000
Spencer	3,890		3,890			
Taylor				7,650	1,000	8,650
Todd	16,000	3,400	19,400	16,000	4,000	20,000
Trigg	11,500	3,200	14,700	12,200	4,200	16,400
Trimble	10,750		10,750	10,500		10,500
Union	68,000	1,500	69,500	69,500	1,500	71,000
Warren	30,000	2,500	32,500	35,000	2,700	37,700
Washington	31,090	1,286	32,375	30,150	1,240	31,390
Wayne	30,000	800	30,800	34,000	1,000	35,000
Webster	37,500	2,820	40,320	37,500	2,820	40,320
Whitley	21,600	550	27,150	50,000	1,500	51,500
Wolfe	10,000		10,000	20,000	1,000	21,000
Woodford	14,500	3,600	18,100	14,500	3,600	18,100
	2,631,024	183,749	2,814,773	2,782,017	182,056	2,964,073

VALUE OF ALL SCHOOL PROPERTY.

	1905-1906			1906-1907		
	White	Colored	Total	White	Colored	Total
Adair	14,070	867	14,937	14,070	867	14,937
Allen	20,000	5,000	25,000	30,000	580	30,580
Anderson	23,300	1,325	24,625	25,300	1,325	26,625
Ballard	---	---	---	34,319	1,199	35,513
Barren	68,900	7,260	76,160	6,980	7,710	77,510
Bath	20,386	2,060	22,446	21,386	2,165	23,551
Bell	21,500	1,300	22,800	22,350	1,450	23,800
Boone	39,500	450	39,950	41,000	600	41,600
Bourbon	18,717	4,682	23,399	21,325	4,765	26,090
Boyd	22,700	---	22,700	31,885	---	31,885
Boyle	36,678	4,320	40,998	37,645	4,176	41,821
Bracken	51,245	950	52,195	---	---	36,000
Breathitt	16,773	40	16,813	19,000	---	19,000
Breckinridge	32,000	1,300	33,300	33,000	1,300	34,300
Bullitt	18,000	2,800	20,800	24,000	2,625	26,625
Butler	22,000	700	22,700	22,000	780	22,780
Caldwell	24,785	1,160	25,945	33,737	1,649	35,386
Calloway	---	---	---	33,330	875	34,205
Campbell	44,000	---	44,000	45,000	---	45,000
Carlisle	31,500	800	32,300	32,500	800	33,300
Carroll	46,070	1,200	47,270	52,060	1,800	53,860
Carter	32,000	---	32,000	33,000	---	33,000
Casey	24,000	---	24,000	21,000	---	21,000
Christian	122,331	24,532	146,863	122,331	24,732	147,563
Clark	18,033	2,264	20,297	18,274	2,321	20,595
Clay	9,300	350	9,650	---	---	---
Clinton	9,300	330	9,630	9,600	350	9,950
Crittenden	---	---	---	---	---	---
Cumberland	---	---	---	---	---	---
Davless	53,839	2,568	56,407	60,238	3,300	63,538

Seventeenth Biennial Report Bureau of Agriculture. 808

Edmonson	15,550	700	15,550	3,740	775	56,500	3,740
Elliott	19,200	5,550	19,900	53,000	3,095	67,245	43,000
Estill	38,000	700	41,550	30,000	575	41,575	59,000
Fayette	38,825	700	39,525	30,000	1,965	19,790	36,000
Fleming	34,200	500	12,500	16,000	550	25,800	35,310
Floyd	12,000	2,800	51,200	51,710	1,100	22,900	17,200
Franklin	48,400	1,075	14,750	11,795	680	12,475	55,210
Fulton	13,675	3,000	36,000	49,725	775	56,500	12,475
Garrard	23,000	1,150	46,000	64,150	3,095	67,245	6,000
Grant	63,810	2,435	66,345	41,000	575	41,575	6,000
Graves	40,000	575	40,575	17,825	1,965	19,790	110
Grayson	18,340	2,190	21,030	25,250	550	25,800	1,200
Green	25,000	650	25,650	21,800	1,100	22,900	3,500
Greenup	21,200	1,100	22,300	36,565	1,750	37,315	55,210
Hancock	35,175	1,750	36,925	15,000	500	15,500	12,475
Hardin	12,610	175	12,785	34,400	1,400	35,800	680
Harlan	32,463	1,170	33,633	71,000	9,000	80,000	775
Harrison	2,509	302	2,711	26,000	2,500	27,500	3,095
Hart	68,000	7,850	75,850	35,810	1,210	15,880	41,060
Henderson	14,121	1,210	15,331	14,470	5,850	41,060	87,131
Henry	34,915	5,930	40,845	14,180	8,615	87,131	21,550
Hickman	12,451	6,820	12,451	18,100	3,450	21,550	42,480
Hopkins	77,154	3,450	83,974	42,480	1,150	46,150	46,150
Jefferson	17,100	1,150	20,550	45,300	1,600	32,100	19,200
Jessamine	33,500	85	33,500	30,500	400	19,200	29,100
Johnson	45,150	800	46,300	25,250	500	29,100	31,495
Kenton	15,190	650	15,275	38,600	125	23,285	6,700
Knox	25,000	125	25,000	23,200	208	13,500	29,720
Larue	24,600	35	24,600	6,500	235	29,720	
Laurel	39,800	450	25,250	18,800			
Lawrence	22,000	85	40,035	38,600			
Lee	3,500	450	22,035	31,370			
Leslie	13,221	450	3,500	23,200			
Letcher	26,540	450	13,221	6,500			
Lewis			26,990	13,500			

804 *Seventeenth Biennial Report Bureau of Agriculture.*

Pulaski	50,000	1,250	51,250	50,000	1,250	51,250
Robertson	6,200	100	6,300			30,230
Rockcastle						12,300
Rowan	11,874		11,874	12,300		11,040
Russell	11,174	375	11,549	10,795	245	24,735
Scott	20,330	1,650	21,980	23,850	1,855	27,005
Shelby	17,122	3,500	20,622	24,650	2,355	6,250
Simpson	10,300	2,725	13,025	5,450	800	
Spencer			5,000			
Taylor				10,950	1,500	12,450
Todd			21,300	17,200	4,600	21,800
Trigg						
Trimble	12,850		12,850			12,700
Union	71,840	1,800	73,640	75,500	1,800	77,300
Warren	37,500	3,750	41,250	42,650	3,980	46,630
Washington	33,460	1,635	35,095	32,580	1,715	34,295
Wayne	35,000	1,000	36,000	32,000	1,200	39,200
Webster	41,900	3,195	44,195	41,000	3,195	44,195
Whitley	30,800	975	31,775	60,000	1,900	61,900
Wolfe	12,500		12,500	24,000		24,000
Woodford	16,030	4,100	20,130	16,130	4,120	20,250
	3,011,069	133,008	3,194,077	3,151,267	187,129	3,338,395

[illegible]

[illegible]

PRIVATE SCHOOLS, COLLEGES, ETC.

	Number of High Schools and Academies.						Approximate Number of Teachers in same.					
	1905-1906			1906-1907			1907-1908			1908-1909		
	White	Col'd.	Total	White	Col'd.	Total	White	Col'd.	Total	White	Col'd.	Total
Letcher	---	---	---	---	---	---	---	---	---	---	---	---
Lewis	---	---	---	1	---	1	---	---	---	2	---	2
Lincoln	1	---	1	1	---	1	3	---	3	3	---	3
Livingston	---	---	---	---	---	---	---	---	---	---	---	---
Logan	2	---	2	2	---	2	9	---	9	8	---	8
Lyon	---	---	---	---	---	---	---	---	---	---	---	---
Madison	---	---	---	---	---	---	---	---	---	---	---	---
Magoffin	1	---	1	1	---	1	3	---	3	3	---	3
Marion	2	1	3	3	1	4	15	3	18	15	1	16
Marshall	---	---	---	---	---	---	---	---	---	---	---	---
Martin	---	---	---	---	---	---	---	---	---	---	---	---
Mason	2	---	2	2	---	2	5	---	5	5	---	5
McCracken	1	---	1	1	---	1	2	---	2	2	---	2
McLean	1	---	1	1	---	1	3	---	3	3	---	3
Meade	---	---	---	---	---	---	---	---	---	---	---	---
Menefee	---	---	---	---	---	---	---	---	---	---	---	---
Mercer	1	---	1	1	---	1	5	---	5	5	---	5
Metcalfe	---	---	---	---	---	---	---	---	---	---	---	---
Monroe	---	---	---	---	---	---	---	---	---	---	---	---
Montgomery	3	---	3	3	---	3	8	---	8	6	---	6
Morgan	1	---	1	1	---	1	4	---	4	4	---	4
Muhlenberg	---	---	---	---	---	---	---	---	---	---	---	---
Nelson	6	1	7	6	1	7	11	2	13	23	3	26
Nicholas	---	---	---	---	---	---	---	---	---	---	---	---
Ohio	---	---	---	---	---	---	---	---	---	---	---	---
Oldham	1	---	1	1	---	1	---	---	---	1	---	1
Owen	---	---	---	---	---	---	---	---	---	---	---	---
Owsley	1	---	1	1	---	1	2	---	2	2	---	2

PRIVATE SCHOOLS, COLLEGES, ETC.
NUMBER PUPILS TAUGHT IN THE COUNTY OUTSIDE OF THE PUBLIC SCHOOLS.

	1905-1906			1906-1907		
	White	Colored	Total	White	Colored	Total
Adair -----	---	---	---	---	---	---
Allen -----	---	---	---	100	---	100
Anderson -----	50	---	50	---	---	---
Ballard -----	---	---	---	200	---	200
Barren -----	300	75	375	400	---	400
Bath -----	---	---	---	---	---	---
Bell -----	---	---	---	---	---	---
Boone -----	---	---	---	---	---	---
Bourbon -----	565	---	565	640	---	640
Boyd -----	---	---	---	---	---	---
Boyle -----	800	70	870	900	100	1,000
Bracken -----	75	---	75	---	---	---
Breathitt -----	285	---	285	---	---	---
Breckinridge -----	100	---	100	200	---	200
Bullitt -----	15	80	95	15	---	15
Butler -----	---	---	---	---	---	---
Caldwell -----	125	---	125	100	---	100
Calloway -----	---	---	---	---	---	---
Campbell -----	---	---	---	---	---	---
Carlisle -----	---	---	---	---	---	---
Carroll -----	---	---	---	---	---	---
Carter -----	---	---	---	---	---	---
Casey -----	---	---	---	---	---	---
Christian -----	375	200	575	250	100	350
Clark -----	75	---	75	80	---	80
Clay -----	500	---	500	600	---	600
Clinton -----	200	---	200	---	---	---
Crittenden -----	---	---	---	---	---	---
Cumberland -----	---	---	---	---	---	---
Daviess -----	850	---	850	800	---	800
Edmonson -----	---	---	---	---	---	---
Elliott -----	---	---	---	---	---	---
Estill -----	300	---	300	75	---	75
Fayette -----	2,000	---	2,000	---	---	---
Fleming -----	---	---	---	---	---	---
Floyd -----	200	---	200	200	---	200
Franklin -----	275	---	275	300	---	300
Fulton -----	---	---	---	---	---	---
Gallatin -----	---	---	---	---	---	---
Garrard -----	---	---	---	---	---	---
Grant -----	---	---	---	---	---	---
Graves -----	300	---	300	300	---	300
Grayson -----	---	---	---	---	---	---
Green -----	---	---	---	---	---	---
Greenup -----	---	---	---	---	---	---
Hancock -----	---	---	---	---	---	---
Hardin -----	240	20	260	235	18	253
Harlan -----	400	---	400	---	---	---
Harrison -----	80	---	80	100	---	100
Hart -----	---	---	---	---	---	---
Henderson -----	350	65	415	375	70	445
Henry -----	---	---	---	200	---	200
Hickman -----	225	25	250	225	25	250
Hopkins -----	140	125	265	250	125	375
Jackson -----	120	---	120	115	---	115
Jefferson -----	550	200	750	550	200	750
Jessamine -----	500	40	540	500	50	550
Johnson -----	120	---	120	200	---	200
Kenton -----	---	---	---	---	---	---
Knott -----	---	---	---	---	---	---

814 *Seventeenth Biennial Report Bureau of Agriculture.*

PRIVATE SCHOOLS, COLLEGES, ETC.

PER PUPILS TAUGHT IN THE COUNTY, OUTSIDE OF THE PUBLIC SCHOOLS,

	1905-1906			1906-1907		
	White	Col'd	Total	White	Col'd	Total
Knox	200	---	200	225	---	225
Larue	---	---	---	30	10	40
Laurel	---	---	---	---	---	---
Lawrence	100	---	100	---	---	---
Lee	25	---	25	---	---	---
Leslie	---	---	---	---	---	---
Letcher	---	---	---	---	---	---
Lewis	---	---	---	---	---	---
Lincoln	40	---	40	35	---	35
Livingston	---	---	---	---	---	---
Logan	450	40	490	380	---	380
Lyon	---	---	---	---	---	---
Madison	1,300	---	1,300	700	---	700
Magoffin	---	---	---	---	---	---
Marion	480	105	585	680	60	740
Marshall	---	---	---	---	---	---
Martin	---	---	---	---	---	---
Mason	125	---	125	125	---	125
McCracken	135	---	135	150	---	150
McLean	125	---	125	150	---	150
Meade	---	---	---	---	---	---
Menefee	---	---	---	---	---	---
Mercer	---	---	---	295	35	330
Metcalfe	---	---	---	---	---	---
Monroe	150	---	150	---	---	---
Montgomery	145	---	145	200	---	200
Morgan	68	---	68	75	---	75
Muhlenberg	---	---	---	---	---	---
Nelson	---	---	---	260	40	300
Nicholas	---	---	---	---	---	---
Ohio	---	---	---	---	---	---
Oldham	---	---	---	40	---	40
Owen	---	---	---	---	---	---
Owsley	250	---	250	250	---	250
Pendleton	---	---	---	---	---	---
Perry	---	---	---	---	---	---
Pike	500	---	500	250	---	250
Powell	---	---	---	---	---	---
Pulaski	---	---	---	---	---	---
Robertson	---	---	---	---	---	---
Rockcastle	---	---	---	---	---	---
Rowan	200	---	200	200	---	200
Russell	125	---	125	---	---	---
Scott	40	15	45	---	---	---
Shelby	300	---	300	---	---	---
Simpson	200	---	200	125	---	125
Spencer	---	---	---	---	---	---
Taylor	---	---	---	200	---	200
Todd	50	---	50	90	---	90
Trigg	90	---	90	---	---	---
Trimble	---	---	---	---	---	---
Union	---	---	---	330	---	330
Warren	1,800	60	1,860	1,365	75	1,438
Washington	100	---	100	100	---	100
Wayne	---	---	---	---	---	---
Webster	60	---	60	60	---	60
Whitley	500	---	500	150	---	150
Wolfe	700	---	700	300	---	300
Woodford	100	---	100	250	---	250
	18,193	1,120	19,313	14,915	908	15,823

CENSUS ENROLLMENT—WHITE.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Adair	2,342	2,284	4,623	2,396	2,271	4,567
Allen	2,241	2,164	4,397	2,241	2,164	4,395
Anderson	1,416	1,373	2,785	1,416	1,373	2,789
Ballard	---	---	2,542	---	1,744	3,534
Barren	3,223	3,133	6,361	3,200	3,200	6,400
Bath	2,066	2,025	4,199	2,157	2,020	4,186
Bell	---	---	4,048	2,258	2,110	4,368
Boone	1,194	1,170	2,364	1,180	1,183	2,363
Bourbon	1,175	1,071	2,246	1,174	1,189	2,303
Boyd	---	---	3,936	2,672	1,879	3,955
Boyle	1,406	1,340	2,646	1,406	1,240	2,646
Bracken	1,599	1,551	3,150	---	---	---
Breathitt	3,141	2,795	5,936	3,347	2,979	6,426
Breckinridge	3,129	2,990	6,919	3,057	3,033	6,123
Bullitt	1,318	1,214	2,532	1,262	7,157	2,419
Butler	3,632	2,550	5,182	2,583	2,673	5,260
Caldwell	931	1,373	3,804	1,970	1,816	3,786
Calloway	---	---	---	2,674	2,476	5,150
Campbell	---	---	4,172	---	---	4,204
Carlisle	1,566	1,374	2,940	1,509	3,187	2,896
Carroll	1,145	1,128	2,273	1,155	1,170	2,325
Carter	4,062	3,873	7,935	4,101	3,796	7,894
Casey	2,628	2,590	5,218	---	---	5,060
Christian	3,114	3,019	6,133	3,037	2,933	6,020
Clark	1,421	1,389	2,810	1,434	1,383	2,817
Clay	3,219	2,959	6,177	3,158	2,905	6,063
Clinton	---	---	2,547	1,352	1,277	2,629
Crittenden	---	---	---	---	---	---
Cumberland	---	---	---	---	---	---
Davess	3,852	3,500	7,452	3,835	3,566	7,401

Edmonson	2,122	1,379	4,101	1,783	1,671	2,454
Elliott	2,319	1,712	4,131	2,107	1,923	3,978
Estill				2,197	2,066	4,262
Fayette				1,379	1,212	2,591
Fleming	2,422	2,359	4,631	2,348	2,332	4,580
Floyd	3,359	3,111	6,469	3,359	3,110	6,469
Franklin	1,638	1,551	3,189	1,589	1,433	3,011
Fulton	1,488	1,460	2,948	1,499	1,461	2,960
Gallatin	653	571	1,224	644	545	1,189
Garrard	1,473	1,364	2,837	487	1,332	2,869
Grant	1,898	1,797	3,695	1,834	1,726	3,560
Graves	5,018	4,936	10,014	5,037	5,067	10,104
Grayson	3,370	3,203	6,573	3,292	3,117	6,409
Green	1,778	1,690	3,468	1,809	1,663	3,471
Greenup	2,759	2,591	5,450	2,744	2,373	5,617
Hancock	1,457	1,310	2,767	1,372	1,256	2,628
Hardin	3,316	3,200	6,416	3,170	3,191	6,361
Harlan	1,923	1,720	3,643	1,909	1,711	3,620
Harrison	1,820	1,812	3,632	2,161	2,144	4,305
Hart			5,178	2,703	2,437	5,140
Henderson	2,660	2,376	5,036	2,523	2,276	4,799
Henry				1,820	1,728	3,548
Hickman	1,903	1,475	3,378	1,686	1,503	3,189
Hopkins	4,239	4,151	8,420	4,282	4,133	8,415
Jackson	2,043	1,932	3,975	2,019	1,892	3,911
Jefferson	3,527	3,313	6,840	3,956	3,669	7,625
Jessamine	1,310	1,276	2,586	1,368	1,284	2,652
Johnson	2,974	2,766	5,740	3,069	2,799	5,838
Kenton	2,677	2,591	5,268	11,929	12,540	24,469
Knott	1,823	1,756	3,578	1,838	1,825	3,663
Knox	3,763	3,361	7,124	3,931	3,550	7,481
Larue				1,741	1,482	3,223
Laurel	2,326	3,234	6,579	2,442	3,248	6,670
Lawrence	3,622	3,658	7,280	3,672	3,609	7,281
Lee	1,725	1,619	3,344	1,820	1,899	3,519
Leslie	1,562	1,479	3,041	1,585	1,502	3,087
Letcher	1,934	1,835	3,809	1,924	1,835	3,809
Lewis	2,742	2,590	5,332	2,674	2,531	5,255

CENSUS ENROLLMENT—White.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Lincoln	3,282	2,127	4,512	2,319	2,210	4,529
Livingston	---	---	3,278	---	---	3,268
Logan	2,834	2,697	5,431	2,904	2,737	5,641
Lyon	1,239	1,288	2,527	1,289	1,268	2,557
Madison	2,721	2,666	5,387	2,804	2,709	5,513
Magoffin	2,476	2,388	4,864	2,558	2,475	5,033
Marion	2,358	2,285	4,643	2,172	2,093	4,265
Marshall	2,344	2,464	4,808	2,469	2,375	4,844
Martin	1,291	1,176	2,467	1,324	1,198	2,522
Mason	1,708	1,611	3,319	1,594	1,649	3,243
McCracken	1,727	1,652	3,379	1,648	1,648	3,296
McLean	2,163	1,986	4,149	2,098	1,907	4,005
Meade	1,525	1,408	2,933	1,407	1,376	2,783
Menefee	---	---	2,460	1,257	1,170	2,427
Mercer	1,828	1,757	3,585	1,828	1,757	3,585
Metcalfe	1,531	1,516	3,047	1,531	1,516	3,047
Monroe	2,158	2,244	4,402	2,164	2,178	4,342
Montgomery	1,451	1,350	2,801	1,367	1,386	2,753
Morgan	2,808	2,759	5,567	2,673	2,683	5,356
Mullinberry	3,586	3,367	6,953	3,577	3,402	6,979
Nelson	2,348	2,230	4,578	2,283	2,136	4,419
Nicholas	1,547	1,478	3,025	1,528	1,441	2,969
Ohio	4,261	3,995	8,256	4,334	4,034	8,368
Oldham	694	638	1,332	703	660	1,363
Owen	2,232	2,112	4,344	2,263	2,064	4,327
Owsley	1,348	1,309	2,657	1,339	1,380	2,719
Pendleton	---	---	4,402	1,968	1,874	3,842
Perry	1,845	1,769	3,614	1,722	1,508	3,230
Pike	5,042	4,729	9,769	5,355	5,000	10,355
Powell	1,061	1,013	2,064	1,051	1,024	2,075

818 *Seventeenth Biennial Report Bureau of Agriculture.*

Pulaski	5,170	5,038	10,258	6,006	5,843	11,848
Robertson	599	571	1,170	2,388	2,240	4,828
Rockcastle				1,733	1,638	3,361
Rowan	1,601	1,582	3,153	1,691	1,702	3,393
Russell	1,561	1,711	3,362	1,581	1,486	3,076
Scott	1,567	1,565	3,072	1,783	1,738	3,521
Shelby	1,810	1,786	3,596	1,274	1,208	2,482
Simpson	1,283	1,257	2,540	1,737	1,738	2,046
Spencer			1,984			2,046
Taylor						3,475
Todd	1,723	1,667	3,390	1,897	1,859	3,390
Trigg	1,894	1,880	3,774	930	921	3,756
Trimble	973	987	1,960	2,830	2,747	5,577
Union	3,020	2,793	5,813	2,731	2,597	5,328
Warren	2,762	2,682	5,444	1,963	1,737	3,700
Washington	1,965	1,772	3,737	3,012	2,713	5,725
Wayne	2,878	2,625	5,503	3,011	2,984	5,995
Webster	2,997	2,907	5,904	5,149	4,890	10,039
Wolfe	1,939	1,772	9,595	1,939	1,772	3,711
Woodford	1,212	1,070	3,717	1,336	1,098	2,334
Whitley	4,900	4,695	2,282			
	229,643	217,396	447,039	257,257	251,159	508,416

CENSUS ENROLLMENT—Colored.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Adair	272	279	551	264	279	543
Allen	177	143	320	177	143	320
Anderson	203	193	396	233	193	396
Ballard			536	259	276	535
Barren	693	714	1,407	684	704	1,388
Bath	233	258	490	232	258	490
Bell			85	68	55	123
Boone	101	76	177	102	82	184
Bourbon	820	803	1,623	875	843	1,718
Boyd			47	18	25	43
Boyle	711	651	1,362	760	621	1,381
Bracken	54	42	96	40	32	72
Breathitt	93	66	159	36	44	80
Breckinridge	372	351	723	357	326	683
Bullitt	173	170	343	152	142	294
Butler	140	142	282	119	120	239
Caldwell	502	459	961	504	485	989
Calloway				170	186	356
Campbell						
Carlisle	85	87	172	80	92	172
Carroll	110	110	220	116	81	197
Carter	33	21	54	40	30	70
Casey			178			192
Christian	2,751	2,863	5,614	2,774	2,781	5,455
Clark	394	321	715	374	325	699
Clay	83	88	171	79	75	154
Clinton			60	37	23	60
Crittenden						
Cumberland						
Davless	443	438	881	430	424	854

CENSUS ENROLLMENT—Colored.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Lincoln	668	667	1,335	626	634	1,260
Livingston	---	---	253	---	---	243
Logan	1,161	1,168	2,229	1,106	1,036	2,142
Lyon	289	310	599	289	310	599
Madison	363	751	1,614	873	736	1,609
Magoffin	8	10	18	7	10	17
Marion	611	608	1,219	602	583	1,185
Marshall	74	56	130	67	57	124
Martin	---	---	---	---	---	---
Mason	469	459	928	453	428	881
McCracken	316	307	623	333	289	622
McLean	196	---	356	150	146	296
Meade	147	140	287	149	134	283
Menefee	11	10	21	15	8	23
Mercer	436	433	869	436	433	869
Metcalfe	178	166	334	178	166	334
Monroe	157	147	304	166	149	305
Montgomery	546	591	1,137	566	581	1,147
Morgan	---	---	---	12	8	20
Muhlenberg	460	402	862	458	412	870
Nelson	556	635	291	612	565	1,171
Nicholas	168	172	340	157	165	322
Ohio	227	250	477	236	242	478
Oldham	240	236	476	228	237	465
Owen	197	199	396	620	261	431
Owsley	15	13	28	16	9	25
Pendleton	---	---	120	50	74	124
Perry	42	51	93	25	25	50
Pike	41	44	85	41	51	92
Powell	61	74	135	61	74	135

822 *Seventeenth Biennial Report Bureau of Agriculture.*

Pulaski	232	284	516	206	259	465
Robertson	23	12	35			23
Rockcastle				9	14	
Rowan						
Russell	65	63	128	65	58	123
Scott	661	632	1,293	608	576	1,184
Shelby	874	885	1,759	759	773	1,532
Simpson	484	514	998	427	473	900
Spencer			440			400
Taylor				257	294	551
Todd	1,257	1,147	2,406	1,257	1,147	2,406
Trigg	757	718	1,475	746	691	1,437
Trimble	25	26	51	22	23	45
Union	460	451	911	507	480	987
Warren	860	830	1,680	828	794	1,622
Washington	419	429	848	438	440	873
Wayne	136	150	286	120	149	260
Webster	440	461	901	450	462	912
Whitley	164	177	341	181	187	368
Wolfe	30	23	52	30	22	52
Woodford	627	603	1,230	631	597	1,228
	32,034	30,736	62,770	35,291	34,028	69,319

NUMBER OF PUPILS ENROLLED IN SCHOOL—White.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Adair	1,691	1,652	3,343	1,676	1,680	3,356
Allen	---	---	---	1,468	1,584	3,052
Anderson	1,225	1,195	2,420	1,310	1,215	2,525
Ballard	1,300	1,217	2,517	1,352	1,280	2,632
Barren	2,401	2,303	4,704	2,342	2,284	4,626
Bath	1,600	1,157	2,737	1,323	1,415	2,738
Bell	---	---	3,023	---	---	3,853
Boone	960	1,020	1,980	950	1,000	1,950
Bourbon	620	599	1,219	628	583	1,211
Boyd	---	---	3,801	1,400	1,402	2,802
Boyle	960	1,100	2,060	982	1,050	1,982
Bracken	---	---	2,306	---	---	---
Breathitt	2,532	2,119	4,651	2,978	2,762	5,740
Breckinridge	2,316	2,811	5,127	2,404	2,273	4,677
Bullitt	1,191	1,000	2,191	1,025	940	1,965
Butler	1,720	1,734	3,454	1,645	2,240	3,885
Caldwell	1,576	1,534	3,110	1,428	1,372	2,800
Calloway	---	---	---	2,674	2,476	5,150
Campbell	1,112	1,019	2,131	---	---	2,248
Carlisle	1,025	1,020	2,045	1,001	1,015	2,016
Carroll	819	818	1,637	876	679	1,555
Carter	3,620	3,738	7,358	3,700	3,328	7,028
Casey	---	---	4,205	---	---	3,762
Christian	2,019	2,038	4,157	2,031	2,157	4,234
Clark	903	943	1,846	997	956	1,952
Clay	2,115	1,325	3,240	2,715	2,320	5,035
Clinton	1,119	1,038	2,157	1,231	1,180	2,411
Crittenden	---	---	---	---	---	---
Cumberland	---	---	---	---	---	---
Davless	2,731	2,534	5,268	2,647	2,561	5,208

824 *Seventeenth Biennial Report Bureau of Agriculture.*

Edmonson	1,762	1,544	3,306	1,430	1,338	2,718
Elliott	2,110	1,618	2,728	1,887	1,488	3,172
Estill	723	698	1,421	1,761	1,512	3,263
Fayette	1,704	1,447	3,151	2,125	2,000	4,225
Fleming	3,300	3,050	6,350	3,275	3,000	6,275
Floyd	1,051	980	2,031	976	984	1,910
Franklin			2,120	1,039	1,004	2,043
Fulton	468	404	872	503	407	909
Gallatin	1,050	989	1,938	1,047	995	2,042
Garrard	1,635	1,465	3,100	1,600	1,400	3,000
Grant	4,022	3,395	7,917	3,823	3,324	7,647
Graves	2,371	2,469	5,140	2,675	2,475	5,150
Grayson	1,330	1,260	2,580	1,323	1,242	2,565
Green	2,034	393	5,450	2,089	2,117	4,206
Greenup	983	901	1,834	1,021	949	1,970
Hancock	2,350	2,068	4,418	2,300	2,175	4,475
Hardin			2,581	1,560	3,000	2,910
Harlan	1,800	1,253	2,553	1,987	1,786	3,773
Harrison			3,744	1,750	1,700	3,450
Hart	1,876	1,785	3,631	1,500	1,400	2,900
Henderson				1,159	1,093	2,257
Henry	1,162	1,031	2,193	2,759	2,713	5,472
Hickman	2,331	2,502	5,133	1,637	1,328	2,855
Hopkins	1,570	1,550	3,120	2,275	2,135	4,400
Jackson	2,173	2,019	4,192	609	648	1,257
Jefferson	641	665	1,306	2,243	2,134	4,377
Jessamine	2,417	2,217	4,634	1,278	1,309	2,487
Johnson	1,234	1,170	2,394	1,708	1,450	3,158
Kenton	1,607	1,322	2,929	3,489	2,764	6,253
Knott	3,450	2,700	6,150	953	967	1,920
Knox				2,711	2,503	5,213
Larue	2,672	2,635	5,207	3,049	2,941	5,990
Laurel	2,700	2,715	5,415	1,678	1,729	3,407
Lawrence	1,552	1,457	3,009	1,394	1,384	2,780
Lee	1,085	1,025	2,110	1,380	1,798	3,673
Leslie	1,803	1,423	3,225	1,873	1,862	3,735
Letcher	1,840	1,688	3,528			
Lewis						

NUMBER OF PUPILS ENROLLED IN SCHOOL—WHITE.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Lincoln	1,800	2,000	3,800	1,900	1,950	3,850
Livingston	1,188	1,081	2,269	1,400	1,300	2,700
Logan	2,024	1,800	3,800	2,101	1,827	3,928
Lyon	1,006	1,198	2,204	1,052	1,180	2,232
Madison	1,780	1,794	3,574	---	---	3,718
Magoffin	---	---	3,450	1,920	2,162	4,082
Marion	1,309	1,226	2,535	972	1,121	2,093
Marshall	4,040	2,160	4,000	2,076	1,713	3,789
Martin	880	700	1,580	1,072	795	1,867
Mason	1,116	1,123	2,239	984	968	1,952
McCracken	1,210	1,080	2,290	1,255	1,113	2,393
McLean	---	---	3,215	---	---	3,498
Meade	1,300	1,200	2,500	945	905	1,850
Menefee	1,034	929	1,963	1,003	919	1,922
Mercer	---	---	---	---	---	---
Metcalfe	1,099	1,137	2,236	1,111	1,113	2,224
Monroe	1,805	1,830	3,635	1,750	1,666	3,416
Montgomery	916	913	1,629	576	702	1,278
Morgan	2,171	2,200	4,371	2,393	1,999	4,392
Muhlenberg	2,688	2,692	5,380	3,250	3,020	6,270
Nelson	1,249	1,174	2,423	1,258	1,131	2,389
Nicholas	1,230	1,001	2,231	1,090	1,021	2,111
Ohio	3,834	3,600	7,434	3,001	2,861	5,862
Oldham	---	---	920	530	560	1,090
Owen	1,340	1,275	2,615	1,812	1,650	3,462
Owsley	1,145	1,125	2,270	1,160	1,116	2,277
Pendleton	2,030	2,205	4,235	1,488	2,122	3,540
Perry	---	---	---	1,722	1,508	3,280
Pike	3,867	3,388	7,255	3,673	3,163	6,836
Powell	793	734	1,517	810	791	1,601

826 *Seventeenth Biennial Report Bureau of Agriculture.*

Pulaski	3,929	3,707	7,836	4,103	3,995	8,098
Robertson	380	420	800			
Rockcastle				1,960	1,876	3,836
Rowan						
Russell	1,227	780	2,007	1,426	1,363	2,789
Scott	1,399	1,817	2,716	1,062	912	1,974
Shelby	917	831	1,738	1,296	1,147	2,443
Simpson	1,185	1,226	2,411	637	573	1,200
Spencer	950	850	1,800			
Taylor				1,303	1,529	2,832
Todd						
Trigg	1,600	1,650	3,250			2,500
Trimble	1,400	1,510	2,910	1,400	1,502	2,902
Union	820	840	1,660	800	820	1,620
Warren	1,609	1,484	3,093	1,929	1,933	3,922
Washington	1,892	1,715	3,607	1,903	1,867	3,760
Wayne	1,462	1,395	2,857	1,487	1,383	2,867
Webster	2,300	2,140	4,440	2,000	1,800	3,800
Whitley	2,516	2,501	5,017	2,516	2,501	5,017
Wolfe	2,500	3,200	5,700	3,868	3,509	7,377
Woodford	1,739	1,604	3,343	1,560	1,433	2,993
	662	607	1,269	644	638	1,282
	166,345	154,282	320,607	180,773	169,464	350,237

NUMBER OF PUPILS ENROLLED IN SCHOOL—Colored.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Adair	211	225	436	201	243	444
Allen	---	---	---	95	112	207
Anderson	121	129	250	135	150	285
Ballard	166	188	354	165	179	344
Barren	500	443	943	460	423	882
Bath	152	164	316	138	184	322
Bell	---	---	48	---	---	103
Boone	60	24	84	75	70	145
Bourbon	445	464	909	427	464	891
Boyd	---	---	---	17	24	41
Boyle	450	813	1,263	470	520	990
Bracken	44	55	79	38	30	68
Breathitt	40	27	67	31	33	64
Breckinridge	150	157	307	217	216	433
Bullitt	78	100	178	125	132	257
Butler	101	103	204	80	88	168
Caldwell	365	304	669	309	399	708
Calloway	---	---	---	170	186	356
Campbell	---	---	---	---	---	---
Carlisle	60	58	118	58	54	112
Carroll	59	69	128	65	60	125
Carter	15	18	33	10	20	30
Casey	---	---	140	---	---	90
Christian	1,730	2,053	3,783	1,802	2,132	3,934
Clark	228	208	436	227	231	458
Clay	60	72	132	60	62	122
Clinton	22	14	36	23	10	33
Crittenden	---	---	---	---	---	---
Cumberland	---	---	---	---	---	---
Davless	287	284	571	248	269	517

NUMBER OF PUPILS ENROLLED IN SCHOOL—Colored.

	1905-1906			1906-1907		
	Male	Female	Total	Male	Female	Total
Lincoln	600	560	1,160	550	575	1,125
Livingston	93	61	174	---	---	132
Logan	624	560	1,174	610	575	1,185
Lyon	163	172	335	160	168	328
Madison	583	586	1,168	---	---	1,124
Magoffin	---	---	---	---	---	---
Marion	299	372	671	230	231	461
Marshall	---	---	---	33	38	71
Martin	---	---	---	---	---	---
Mason	226	267	493	218	237	455
McCracken	202	201	403	162	143	305
McLean	---	---	294	---	---	212
Meade	96	100	196	75	70	145
Menefee	8	9	17	8	8	16
Mercer	---	---	---	---	---	---
Metcalfe	133	145	277	122	126	248
Monte	128	130	258	115	120	235
Montgomery	312	276	587	311	401	712
Morgan	---	---	---	8	7	14
Muhlenberg	320	300	620	320	300	620
Nelson	284	378	662	330	340	670
Nicholas	90	87	177	63	73	136
Ohio	204	226	430	169	191	360
Oldham	---	---	260	156	166	320
Owen	160	172	332	175	170	345
Owsley	12	8	20	14	9	23
Pendleton	40	50	90	40	52	92
Perry	---	---	---	25	25	50
Pike	15	20	35	21	30	51
Powell	36	58	94	41	62	103

880 *Seventeenth Biennial Report Bureau of Agriculture.*

Pulaski	148	163	311	141	192	338
Robertson	7	8	15	8	10	18
Rockcastle						
Rowan						
Russell	40	45	95	49	39	88
Scott	321	353	674	342	330	672
Shelby	419	445	874	412	445	857
Simpson	300	290	590	214	286	500
Spencer						
Taylor						
Todd	1,070	1,015	2,085	170	204	374
Trigg	570	605	1,175	576	798	1,525
Trimble	20	20	40	10	14	24
Union	272	286	558	271	302	573
Warren	506	614	1,120	529	586	1,115
Washington	196	203	399	200	210	410
Wayne	108	120	228	80	100	180
Webster	321	304	625	321	304	625
Whitley	106	132	238	122	145	267
Wolfe	17	14	31	14	12	26
Woodford	290	318	608	238	331	568
	19,581	20,614	40,195	26,781	20,392	47,673

Seventeenth Biennial Report Bureau of Agriculture. 831

AVERAGE ATTENDANCE AT SCHOOL.

	1905-1906		1906-1907	
	White	Colored	White	Colored
Adair -----	1,753	151	1,770	159
Allen -----	1,468	115	1,528	98
Anderson -----	1,653	195	1,855	225
Ballard -----	1,383	150	1,458	145
Barren -----	3,034	597	2,903	538
Bath -----	1,511	194	1,352	197
Bell -----	1,565	24	2,120	57
Boone -----	1,750	65	1,725	110
Bourbon -----	774	639	756	565
Boyd -----	1,574	-----	1,613	24
Boyle -----	-----	-----	-----	-----
Bracken -----	-----	-----	-----	-----
Breathitt -----	1,803	36	3,016	35
Breckinridge -----	2,517	197	2,600	216
Bullitt -----	1,206	88	1,077	112
Butler -----	2,105	110	1,856	75
Caldwell -----	1,742	484	1,393	340
Calloway -----	-----	-----	2,400	150
Campbell -----	1,572	-----	1,580	-----
Carlisle -----	1,380	64	1,388	54
Carroll -----	1,134	72	1,063	72
Carter -----	4,780	22	4,240	22
Casey -----	2,805	117	1,767	60
Christian -----	2,368	1,972	2,274	1,956
Clark -----	982	224	1,003	228
Clay -----	-----	-----	-----	-----
Clinton -----	1,330	19	1,616	24
Crittenden -----	-----	-----	-----	-----
Cumberland -----	-----	-----	-----	-----
Davless -----	3,073	305	2,921	270
Edmonson -----	-----	-----	1,285	61
Elliott -----	1,858	-----	1,765	-----
Estill -----	1,368	15	2,557	13
Fayette -----	-----	-----	-----	-----
Fleming -----	1,772	254	1,175	180
Floyd -----	5,400	15	5,750	16
Franklin -----	1,062	146	1,107	131
Fulton -----	1,245	332	1,269	407
Gallatin -----	519	53	535	39
Garrard -----	1,684	599	1,520	750
Grant -----	1,950	120	2,000	115
Graves -----	4,218	398	3,780	393
Grayson -----	2,816	28	3,025	50
Green -----	1,346	201	1,333	199
Greenup -----	2,218	25	2,022	30
Hancock -----	1,020	127	1,101	102
Hardin -----	2,579	387	2,700	270
Harlan -----	1,557	37	1,869	57
Harrison -----	-----	-----	-----	-----
Hart -----	1,819	297	1,983	249
Henderson -----	2,013	488	1,900	525
Henry -----	-----	-----	1,900	290
Hickman -----	-----	-----	1,220	192
Hopkins -----	1,396	228	2,790	734
Jackson -----	1,605	-----	2,078	-----
Jefferson -----	3,792	985	3,825	913
Jessamine -----	697	256	690	196
Johnson -----	2,496	-----	2,568	-----
Kenton -----	1,372	73	1,991	99
Knott -----	1,354	14	1,475	17

882 *Seventeenth Biennial Report Bureau of Agriculture.*

AVERAGE ATTENDANCE AT SCHOOL.

	1905-1906		1906-1907	
	White	Colored	White	Colored
Knox	3,796	149	3,818	157
Larue			1,160	95
Laurel	2,682	134	2,769	132
Lawrence	2,855	14	3,284	22
Lee				
Leslie	864	16		
Letcher	1,667		1,687	
Lewis	1,938	14	1,688	9
Lincoln	2,600	950	2,250	375
Livingston				
Logan	2,323	970	2,021	955
Lyon	1,089	198	1,132	200
Madison	2,038	681	2,018	571
Magoffin				
Marion	1,360	280	926	216
Marshall	2,000			
Martin	1,220		1,350	
Mason	1,401	381	1,239	246
McCracken	1,247	277	1,154	220
McLean	2,830	193	2,630	143
Meade				
Menefee	1,124	19	998	15
Mercer				
Metcalfe	1,246	110	1,175	132
Monroe	1,751	116	2,196	213
Montgomery	1,160	320	932	405
Morgan	2,500		2,459	11
Muhlenberg	4,399	140	4,595	332
Nelson				
Nicholas	1,380	81	1,246	90
Ohio	4,461	261	2,985	304
Oldham				
Owen				
Owsley	1,332	10	1,230	3
Pendleton	3,155	70	2,109	72
Perry			1,292	27
Pike	3,153	12	3,976	16
Powell	741	59	812	63
Fulaski	4,433	191	4,576	207
Robertson	520	7		
Rockcastle				
Powan	1,165		1,703	1,710
Russell	1,573	46	1,561	29
Scott	935	470	1,027	391
Shelby	1,440	495	1,559	547
Simpson	1,180	550		
Spencer				
Taylor				
Todd	2,500	2,000	2,000	1,025
Trigg	1,990	590	2,090	650
Trimble	1,080	26	1,020	16
Union	1,335	355	3,003	354
Warren	2,140	557	1,948	569
Washington	1,521	218	1,540	222
Wayne	2,300	132	2,280	105
Webster	2,962	421	2,962	421
Whitley	3,000	148	3,735	176
Wolfe	1,617	7	1,722	3
Woodford	750	368	733	344
	185,233	23,293	196,622	24,325

VALUE OF ALL SCHOOL PROPERTY.

	1905-1906			1906-1907		
	White	Colored	Total	White	Colored	Total
Lincoln	37,700	3,600	41,300	43,000	3,700	46,700
Livingston	26,550	2,070	28,620	26,500	1,250	27,750
Logan	42,375	3,175	45,550	27,500	2,900	29,400
Lyon	16,902	952	17,855	18,500	953	19,553
Madison	44,000	7,700	51,000	49,200	9,400	58,600
Magoffin	10,280	---	10,280	---	---	12,980
Marion	15,500	700	16,200	22,250	1,800	24,050
Marshall	32,000	600	32,600	30,000	575	30,575
Martin	14,000	---	14,001	14,587	---	14,587
Mason	33,265	3,820	37,085	33,265	3,820	37,085
McCracken	24,235	1,400	25,635	26,035	1,465	27,500
McLean	21,000	1,100	22,100	21,500	1,100	22,600
Meade	16,000	711	16,711	23,000	750	23,750
Menefee	8,000	160	8,160	15,000	325	15,325
Mercer	---	---	---	---	---	---
Metcalfe	14,465	1,020	15,485	14,465	1,020	15,485
Monroe	35,250	400	35,650	19,600	1,200	20,800
Montgomery	61,580	5,210	66,790	33,400	7,300	40,700
Morgan	19,000	---	19,000	29,175	125	29,300
Muhlenberg	29,000	2,550	31,500	7,100	2,900	33,400
Nelson	21,550	4,150	25,700	26,409	3,252	28,661
Nicholas	56,550	650	57,200	50,000	625	50,625
Ohio	29,000	1,400	30,040	31,100	1,200	32,300
Oldham	13,000	2,040	23,440	15,000	2,300	17,300
Owen	---	---	---	59,500	4,300	63,800
Owsley	14,300	215	15,515	15,500	115	15,615
Pendleton	36,650	500	37,150	36,950	500	37,450
Perry	10,695	115	10,800	4,705	225	11,930
Pike	32,055	---	32,055	30,150	225	30,375
Powell	5,000	---	5,000	6,390	312	6,702

Seventeenth Biennial Report Bureau of Agriculture. 885

Cumberland	41	34	40	32	58	53	56	52
Davies	45	37	37	42	56	53	47	45
Edmonson	30	44	44		28		56	
Elliott	34	60	60		33	26	79	
Estill	34	35	35	26	67	54	44	46
Fayette	51				56			
Fleming	53	42	62	43	56	30	84	49
Floyd	33	33	36	34	51	55	58	52
Franklin	42	34	42	40	60	52	62	65
Fulton	42	41	45	31	59	75	26	57
Gallatin	59	64	53	93	66	66	67	80
Garrard	53	70	58	65	66	68	67	80
Grant	40	31	38	38	48	43	50	53
Graves	43	40	47	42	54	29	59	70
Grayson	41	32	40	32	53	47	52	43
Green	38	32	35	43	52	53	48	61
Greenup	41	21	42	43	52	38	56	54
Hancock	41	40	40	40	58	57	60	51
Hardin	43	38	51	54	70	72	63	64
Harlan	56	51	57	53	72	68	76	69
Harrison	35	37	38	34	48	53	53	46
Hart	40	30	39	43	55	47	58	61
Henderson			53	36			65	57
Henry	45	39	30	36	55	45	42	47
Hickman	41	44	35	36	51	57	51	48
Hopkins	40		53		51		73	
Jackson	55	56	51	50	53	91	87	83
Jefferson	32	33	31	26	56	54	54	46
Jessamine	45		44		56		58	
Johnson	26	33	53	78	53	47	67	74
Kenton	38	25	40	27	46	31	49	32
Knott	52	46	50	29	57	50	83	81
Knox			36	32			60	59
Larue			42	45	52	52	53	79
Laurel	41	41	45	61	75	75	54	61
Lawrence	40							
Lee	43	37	45					
Leslie	26	25	40	60	41	44	47	52

ATTENDANCE AT SCHOOL

	1905-1906		1906-1907		1905-1906		1906-1907	
	Percentage based on census.				Percentage based on enrollment.			
	White	Co'ored	White	Colored	White	Colored	White	Colored
Letcher	43	---	44	---	51	---	46	---
Lewis	36	30	31	24	54	63	45	40
Lincoln	68	83	61	69	60	77	59	79
Livingston	42	36	48	45	55	45	60	45
Logan	41	35	40	35	62	57	63	52
Lyon	43	33	45	36	49	59	50	39
Madison	38	42	36	35	57	49	54	50
Magoffin	47	---	46	---	67	---	55	---
Marion	29	23	20	18	54	42	44	47
Marshall	41	---	47	22	50	---	60	39
Martin	52	---	54	---	71	---	69	---
Mason	42	30	35	28	62	38	63	54
McCracken	38	44	37	35	48	68	54	71
McLean	68	46	65	50	89	65	75	67
Meade	44	47	50	50	50	18	75	72
Menefee	46	---	40	69	57	---	52	65
Mercer	---	---	---	---	---	---	---	---
Metcalfe	41	33	38	45	55	39	52	48
Monroe	39	38	50	70	48	46	65	82
Montgomery	41	28	34	35	63	54	72	56
Morgan	45	---	44	55	57	---	56	78
Muhlenberg	48	46	65	55	64	64	73	62
Nelson	34	29	34	31	58	56	56	51
Nicholas	42	23	41	39	63	45	58	65
Ohio	41	45	50	65	58	50	70	75
Oldham	31	58	80	60	67	46	78	70
Owen	60	---	30	38	79	---	65	50
Owsley	50	35	45	26	59	48	54	20

NUMBER OF TEACHERS WHO TAUGHT IN COMMON SCHOOLS—Continued.

	1905-1906				1906-1907				
	White		Colored		White		Colored		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Letcher	57	6	63	---	---	---	59	4	63
Lewis	31	60	91	1	1	2	32	60	92
Lincoln	22	48	70	7	12	17	17	55	72
Livingston	---	---	56	---	---	---	6	31	26
Logan	26	74	100	9	25	34	28	68	96
Lyon	19	18	37	6	3	9	21	15	36
Madison	59	18	77	20	8	28	12	65	77
Magoffin	72	10	82	1	---	1	64	17	81
Marion	11	50	61	5	7	12	8	54	62
Marshall	40	33	73	1	1	2	34	31	65
Martin	29	6	35	---	---	---	26	8	34
Mason	16	41	57	5	10	15	18	38	56
McCracken	18	24	42	---	---	---	11	18	24
McLean	21	47	69	3	3	6	21	45	66
Meade	16	45	61	2	6	8	12	48	60
Menefee	24	15	35	---	---	---	1	27	13
Mercer	19	37	56	1	11	12	15	41	56
Metcalfe	27	26	53	4	6	10	22	31	53
Monroe	32	29	61	2	7	9	37	24	61
Montgomery	9	32	41	8	8	16	9	31	40
Morgan	52	26	78	51	28	79	1	---	1
Muhlenberg	38	64	102	7	8	15	31	62	93
Nelson	17	52	69	4	13	17	20	47	67
Nicholas	19	32	51	1	4	5	20	30	50
Ohio	73	68	131	6	6	12	67	72	139
Oldham	3	14	17	1	5	6	3	17	20
Owen	6	62	68	---	---	---	16	56	72
Owsley	27	14	41	---	1	1	31	10	41

Seventeenth Biennial Report Bureau of Agriculture. 841

Pendleton \	20	61	81	1	1	2	24	58	82	---	2	2
Ferry	40	16	56	1	---	1	43	19	62	1	---	1
Pike	118	28	146	1	---	1	101	44	145	---	1	1
Powell	17	19	36	---	3	3	15	21	36	1	1	2
Pulaski	94	69	163	1	10	11	98	55	153	1	10	11
Robertson	12	9	21	---	1	1	---	---	---	---	---	---
Rockcastle	---	---	---	---	---	---	39	46	75	---	1	1
Rowan	26	24	50	---	---	---	26	28	54	---	---	---
Russell	43	13	56	3	1	4	48	12	60	3	---	3
Scott	8	34	56	3	11	14	13	33	46	3	13	16
Shelby	10	54	64	4	18	22	7	55	62	4	18	22
Simpson	12	33	45	4	11	15	11	34	45	3	12	15
Spencer	11	18	29	3	6	9	7	33	40	3	5	8
Taylor	---	---	---	---	---	---	15	38	53	4	7	11
Todd	23	32	55	10	23	32	19	41	60	16	12	28
Trigg	27	35	62	6	14	20	23	38	61	11	9	20
Trimble	10	28	38	---	2	2	12	28	40	---	2	2
Union	20	70	90	4	11	15	18	73	91	3	12	15
Warren	18	68	86	8	21	29	17	70	87	9	20	29
Washington	14	52	66	3	10	13	22	45	67	4	10	14
Wayne	48	57	105	---	---	---	35	50	85	4	3	7
Webster	44	46	90	7	7	14	40	50	90	4	6	10
Whitley	72	57	129	1	5	6	68	58	124	1	1	7
Wolfe	27	25	52	1	---	1	26	32	58	---	1	1
Woodford	4	27	31	2	16	18	2	29	31	---	15	18
	3,209	4,092	7,301	376	1,115	1,491	3,323	4,359	7,682	313	759	1,072

842 *Seventeenth Biennial Report Bureau of Agriculture.*

FINANCIAL STATEMENT.

	Money Received from State Treasury.	
	1905-1906	1906-1907
Adair -----	\$ 16,548 45	\$ 17,179 72
Allen -----	15,488 62	15,445 98
Anderson -----	10,670 20	10,502 47
Ballard -----	13,171 94	13,802 24
Barren -----	25,525 92	25,991 81
Bath -----	15,257 13	15,556 73
Bell -----	13,504 00	14,997 96
Boone -----	8,598 00	8,652 85
Bourbon -----	12,953 60	13,617 02
Boyd -----	12,987 84	13,279 72
Boyle -----	13,221 50	13,380 75
Bracken -----	10,751 52	10,775 98
Breathitt -----	21,008 56	21,283 68
Breckenridge -----	22,262 24	22,148 88
Bullitt -----	9,696 74	9,771 24
Butler -----	17,959 44	18,357 84
Caldwell -----	15,460 53	15,818 19
Calloway -----	21,661 25	21,868 63
Campbell -----	13,708 50	14,038 20
Carlisle -----	10,287 30	10,281 60
Carroll -----	8,255 52	8,501 94
Carter -----	26,214 50	26,699 55
Casey -----	17,540 88	17,401 60
Chirstian -----	39,214 54	38,756 04
Clark -----	11,608 10	11,817 78
Clay -----	20,777 40	20,623 20
Clinton -----	8,619 30	8,980 32
Crittendon -----	15,865 02	15,653 46
Cumberland -----	11,385 60	11,462 40
Davless -----	27,771 76	28,019 15
Edmonson -----	12,109 44	12,025 60
Elliott -----	13,452 79	13,533 30
Estill -----	13,854 24	14,194 04
Fayette -----	19,197 75	19,677 95
Fleming -----	17,504 74	17,140 19
Floyd -----	20,765 67	21,635 04
Franklin -----	11,982 18	11,484 24
Fulton -----	13,080 64	13,431 00
Gallatin -----	4,448 46	4,329 87
Garrard -----	12,376 35	12,648 96
Grant -----	12,607 09	12,355 90
Graves -----	36,542 03	37,190 64
Grayson -----	21,897 48	21,600 09
Green -----	13,572 00	13,675 20
Greenup -----	18,225 00	16,661 50
Hancock -----	9,965 56	9,622 68
Hardin -----	23,069 94	23,253 36
Harlan -----	12,310 29	12,354 87
Harrison -----	13,111 12	13,260 83
Hart -----	19,609 42	19,602 45
Henderson -----	22,351 33	21,352 12
Henry -----	14,683 44	14,380 80
Hickman -----	13,606 40	13,024 00
Hopkins -----	34,464 15	34,628 75
Jackson -----	13,030 64	12,978 03
Jefferson -----	23,525 25	31,838 56
Jessamine -----	12,009 84	12,207 28
Johnson -----	18,866 43	19,415 36
Kenton -----	18,349 63	18,576 12
Knott -----	11,840 00	12,320 06

Seventeenth Biennial Report Bureau of Agriculture. 843

FINANCIAL STATEMENT.

	Money Received from State Treasury	
	1905-1906	1906-1907
Knox -----	\$ 24,848 61	\$ 25,923 52
Larue -----	11,180 45	11,295 79
Laurel -----	22,588 80	23,188 17
Lawrence -----	23,755 68	24,195 60
Lee -----	11,231 36	11,644 72
Leslie -----	10,037 80	10,325 70
Letcher -----	12,550 03	12,981 36
Lewis -----	17,620 40	17,643 66
Lincoln -----	18,481 05	19,243 95
Livingston -----	12,145 84	11,902 80
Logan -----	26,257 57	25,936 94
Lyon -----	9,947 79	10,484 16
Madison -----	23,006 28	23,654 12
Magoffin -----	16,196 53	16,699 65
Marion -----	19,338 62	18,291 86
Marshall -----	16,140 99	16,551 99
Martin -----	7,954 20	8,150 80
Mason -----	14,021 62	13,790 16
McCracken -----	12,766 67	13,172 96
McLean -----	14,765 86	14,495 03
Meade -----	11,047 05	10,635 42
Menefee -----	8,066 01	8,105 79
Mercer -----	15,260 82	14,766 92
Metcalf -----	10,943 40	11,271 13
Monroe -----	15,340 13	15,445 98
Mongomery -----	12,997 62	12,767 70
Morgan -----	18,333 25	18,511 47
Muhlenberg -----	25,540 20	26,182 00
Nelson -----	19,452 60	18,798 48
Nicholas -----	11,193 00	11,120 20
Ohio -----	28,733 40	29,539 20
Oldham -----	5,957 82	6,130 80
Owen -----	15,593 66	15,715 44
Owsley -----	8,792 19	9,120 03
Pendleton -----	13,819 80	13,765 44
Perry -----	12,217 70	12,841 60
Pike -----	32,615 75	34,841 06
Powell -----	7,694 36	7,381 34
Pulaski -----	39,005 12	40,791 74
Robertson -----	3,934 50	3,818 88
Rockcastle -----	15,299 20	15,432 12
Rowan -----	10,278 18	10,435 71
Russell -----	11,372 40	11,677 05
Scott -----	14,333 76	14,102 76
Shelby -----	17,461 38	16,885 68
Simpson -----	11,615 85	11,404 90
Spencer -----	8,176 14	8,188 11
Taylor -----	12,935 45	13,189 12
Todd -----	19,373 54	19,726 84
Trigg -----	17,743 02	17,838 81
Trimble -----	6,765 00	6,664 68
Union -----	22,249 08	22,291 59
Warren -----	23,800 36	23,452 50
Washington -----	15,006 42	15,165 28
Wayne -----	19,003 30	19,928 88
Webster -----	22,392 96	33,052 60
Whitley -----	32,368 92	34,387 32
Wolfe -----	12,176 00	12,454 00
Woodford -----	11,554 48	11,382 28
	\$1,904,722 64	\$1,963,867 66

842 *Seventeenth Biennial Report Bureau of Agriculture.*

FINANCIAL STATEMENT.

	Money Received from State Treasury.	
	1905-1906	1906-1907
Adair -----	\$ 16,548 45	\$ 17,179 72
Allen -----	15,488 62	15,445 98
Anderson -----	10,670 20	10,502 47
Ballard -----	13,171 94	13,802 24
Barren -----	25,525 92	25,991 81
Bath -----	15,257 13	15,556 73
Bell -----	13,504 00	14,997 96
Boone -----	8,598 00	8,652 85
Bourbon -----	12,953 60	13,617 02
Boyd -----	12,987 84	13,279 72
Boyle -----	13,221 50	13,380 75
Bracken -----	10,751 52	10,775 98
Breathitt -----	21,008 56	21,283 68
Breckenridge -----	22,262 24	22,148 88
Bullitt -----	9,696 74	9,771 24
Rutler -----	17,959 44	18,357 84
Caldwell -----	15,460 53	15,818 19
Calloway -----	21,661 25	21,868 63
Campbell -----	13,708 50	14,038 20
Carlisle -----	10,287 30	10,281 60
Carroll -----	8,255 52	8,501 94
Carter -----	26,214 50	26,699 55
Casey -----	17,540 88	17,401 60
Christian -----	39,214 54	38,756 04
Clark -----	11,608 10	11,817 78
Clay -----	20,777 40	20,623 20
Clinton -----	8,619 30	8,980 32
Crittendon -----	15,865 02	15,653 46
Cumberland -----	11,385 60	11,462 40
Davies -----	27,771 76	28,019 15
Edmonson -----	12,109 44	12,025 60
Elliott -----	13,452 79	13,533 30
Estill -----	13,854 24	14,194 04
Fayette -----	19,197 75	19,677 95
Fleming -----	17,504 74	17,140 19
Floyd -----	20,765 67	21,635 04
Franklin -----	11,982 18	11,484 24
Fulton -----	13,080 64	13,431 00
Gallatin -----	4,448 46	4,329 87
Garrard -----	12,376 35	12,648 96
Grant -----	12,607 09	12,355 90
Graves -----	36,542 03	37,190 64
Grayson -----	21,897 48	21,600 09
Green -----	13,572 00	13,675 20
Greenup -----	18,225 00	18,661 50
Hancock -----	9,965 56	9,622 68
Hardin -----	23,069 94	23,253 36
Harlan -----	12,310 29	12,354 87
Harrison -----	13,111 12	13,260 83
Hart -----	19,609 42	19,602 45
Henderson -----	22,351 33	21,352 12
Henry -----	14,683 44	14,380 80
Hickman -----	13,606 40	13,024 00
Hopkins -----	34,464 15	34,628 75
Jackson -----	13,030 64	12,978 03
Jefferson -----	28,525 25	31,338 56
Jessamine -----	12,009 84	12,207 28
Johnson -----	13,866 43	13,415 36
Kenton -----	13,349 63	13,576 12
Knott -----	11,840 00	12,320 00

Seventeenth Biennial Report Bureau of Agriculture. 848

FINANCIAL STATEMENT.

	Money Received from State Treasury	
	1905-1906	1906-1907
Knox -----	\$ 24,848 61	\$ 25,923 52
Larue -----	11,180 45	11,295 79
Laurel -----	22,588 80	23,188 17
Lawrence -----	23,755 68	24,195 60
Lee -----	11,231 36	11,644 72
Leslie -----	10,037 80	10,325 70
Letcher -----	12,550 03	12,981 36
Lewis -----	17,620 40	17,643 66
Lincoln -----	18,481 05	19,243 95
Livingston -----	12,145 84	11,902 80
Logan -----	26,257 57	25,936 94
Lyon -----	9,947 79	10,484 16
Madison -----	23,006 28	23,654 12
Magoffin -----	16,196 53	16,699 65
Marion -----	19,338 62	18,291 86
Marshall -----	16,140 99	16,551 99
Martin -----	7,954 20	8,150 80
Mason -----	14,021 62	13,790 16
McCracken -----	12,766 67	13,172 96
McLean -----	14,765 86	14,495 03
Meade -----	11,047 05	10,685 42
Menefee -----	8,066 01	8,105 79
Mercer -----	15,260 82	14,766 92
Metcalfe -----	10,943 40	11,271 13
Monroe -----	15,340 13	15,445 98
Monegomery -----	12,997 62	12,767 70
Morgan -----	18,333 25	18,511 47
Muhlenberg -----	25,540 20	26,182 00
Nelson -----	19,452 60	18,798 48
Nicholas -----	11,193 00	11,120 20
Ohio -----	28,733 40	29,539 20
Oldham -----	5,957 82	6,130 80
Owen -----	15,593 66	15,715 44
Owsley -----	8,792 19	9,120 03
Pendleton -----	13,819 80	13,765 44
Perry -----	12,217 70	12,841 60
Pike -----	32,615 75	34,841 06
Powell -----	7,694 36	7,381 34
Pulaski -----	39,005 12	40,791 74
Robertson -----	3,934 50	3,818 88
Rockcastle -----	15,299 20	15,432 12
Rowan -----	10,278 18	10,435 71
Russell -----	11,872 40	11,677 05
Scott -----	14,333 76	14,102 76
Shelby -----	17,461 38	16,885 68
Simpson -----	11,615 85	11,404 90
Spencer -----	8,176 14	8,188 11
Taylor -----	12,935 45	13,189 12
Todd -----	19,373 54	19,726 84
Trigg -----	17,743 02	17,838 81
Trimble -----	6,765 00	6,664 68
Union -----	22,249 08	22,291 59
Warren -----	23,800 36	23,452 50
Washington -----	15,006 42	15,165 28
Wayne -----	19,003 30	19,928 88
Webster -----	22,392 96	33,052 60
Whitley -----	32,368 92	34,387 32
Wolfe -----	12,176 00	12,454 00
Woodford -----	11,554 48	11,382 23
	\$1,904,722 64	\$1,963,867 66

FINANCIAL STATEMENT.

	Taxes Levied for Incidental Expenses.		Subscriptions by Individuals.		Tuition Fees and Other Sources.	
	1905-1906	1906-1907	1905-1906	1906-1907	1905-1906	1906-1907
Adair	---	---	---	---	---	---
Allen	---	---	---	---	---	---
Anderson	\$ 460 00	\$ 510 00	147 00	400 00	328 00	375 00
Ballard	254 00	1,095 41	207 00	253 00	---	---
Barren	---	---	---	---	---	---
Bath	75 67	441 75	109 57	76 30	156 39	609 00
Bell	150 00	400 00	2,000 00	500 00	---	---
Boone	600 00	840 00	1,700 00	1,800 00	---	---
Bourbon	383 66	351 18	92 44	306 25	116 25	783 10
Boyd	77 33	77 40	58 47	103 00	---	---
Boyle	107 00	120 00	---	---	140 74	140 93
Bracken	916 71	1,000 00	150 00	---	---	---
Breathitt	---	---	---	---	---	---
Breckinridge	91 38	71 54	485 02	308 23	951 05	239 92
Bullitt	100 00	100 00	---	---	400 00	---
Butler	52 00	---	300 00	---	---	---
Caldwell	711 25	730 74	---	213 70	199 75	475 48
Calloway	---	657 00	---	350 00	---	---
Campbell	1,864 92	112 33	11 25	28 85	335 90	386 31
Carlisle	---	500 00	---	---	---	---
Carroll	1,065 00	331 00	---	---	---	580 00
Carter	---	---	---	---	---	---
Casey	---	---	---	---	---	---
Christian	577 83	667 89	686 20	2,600 00	2,292 04	1,755 43
Clark	300 00	328 00	---	---	---	---
Clay	---	---	250 00	---	---	---
Clinton	---	---	---	---	---	---
Crittenden	---	---	---	---	---	---
Cumberland	---	---	---	---	---	---
Davless	1,435 46	1,253 54	2,509 48	2,077 67	593 23	606 07

FINANCIAL STATEMENT.

	Taxes Levied for Incidental Expenses.		Subscriptions by Individuals.		Tuition Fees and Other Sources.	
	1906-1906	1906-1907	1905-1906	1906-1907	1905-1906	1906-1907
Adair	---	---	---	---	---	---
Allen	---	---	---	---	---	---
Anderson	\$ 460 00	\$ 510 00	147 00	400 00	328 00	375 00
Ballard	254 00	1,095 41	207 00	253 00	---	---
Barren	---	---	---	---	---	---
Bath	75 67	441 75	109 57	76 30	156 39	609 00
Bell	150 00	400 00	2,000 00	500 00	---	---
Boone	600 00	840 00	1,700 00	1,800 00	---	---
Bourbon	383 66	351 18	92 44	306 25	116 25	783 10
Boyd	77 33	77 40	58 47	103 00	---	---
Boyle	107 00	120 00	---	---	140 74	140 93
Bracken	916 71	1,000 00	150 00	---	---	---
Breathitt	---	---	---	---	---	---
Breckinridge	91 38	71 54	485 02	308 23	951 05	239 92
Bullitt	100 00	100 00	---	---	400 00	---
Butler	52 00	---	300 00	---	---	---
Caldwell	711 25	730 74	---	213 70	199 75	475 48
Calloway	---	657 00	---	350 00	---	---
Campbell	1,864 92	112 33	11 25	28 85	335 90	386 31
Carlisle	---	500 00	---	---	---	---
Carroll	1,065 00	331 00	---	---	---	580 00
Carter	---	---	---	---	---	---
Casey	---	---	---	---	---	---
Christian	577 83	667 89	686 20	2,600 00	2,292 04	1,755 43
Clark	300 00	328 00	---	---	---	---
Clay	---	---	---	---	---	---
Clinton	---	---	250 00	---	---	---
Crittenden	---	---	---	---	---	---
Cumberland	---	---	---	---	---	---
Davless	1,435 46	1,253 54	2,509 48	2,077 67	593 23	606 07

FINANCIAL STATEMENT—Continued.

	Taxes Levied for Incidental Expenses.		Subscriptions by Individuals.		Tuition Fees and Other Sources.	
	1905-1906	1906-1907	1905-1906	1906-1907	1905-1906	1906-1907
Lincoln						
Livingston	208 35	700 00		80 00		100 00
Logan	570 00	550 00	90 00	65 00	90 00	710 00
Lyon	238 00	66 00				
Madison		140 00				
Magoffin						
Marion						
Marshall	500 00					
Martin	15 00	25 00				
Mason					150 00	150 00
McCracken			240 00		150 00	
McLean	1,060 00	1,065 00	800 00	700 00		
Meade	75 00	100 00			90 00	150 00
Menefee	300 00					
Mercer						
Metcalfe						
Monroe						
Montgomery	313 50				417 00	450 00
Morgan		735 80		90 00		
Muhlenberg	200 00	770 00			200 00	
Nelson	150 00	80 00			508 00	155 00
Nicholas	286 00	928 05	125 00		3,103 25	2,545 75
Ohio	1,400 00	500 00			100 00	
Oldham	80 00	320 00				
Owen						
Owaley	60 72	103 20				
Pendleton	1,400 00	1,060 00		50 00		
Perry						
Pike		129 60	260 21			
Powell						

Seventeenth Biennial Report Bureau of Agriculture. 847

Pulaski -----	500 00	-----	50 00	-----	200 00	-----
Robertson -----	70 00	-----	-----	-----	-----	-----
Rockcastle -----	-----	75 00	-----	-----	-----	-----
Rowan -----	-----	-----	-----	-----	-----	-----
Russell -----	17 60	-----	-----	-----	-----	-----
Scott -----	227 00	105 02	101 90	-----	-----	-----
Shelby -----	1,091 82	789 49	480 55	366 34	746 65	4,322 15
Simpson -----	-----	-----	-----	-----	-----	-----
Spencer -----	-----	-----	-----	-----	-----	-----
Taylor -----	-----	-----	-----	-----	-----	-----
Todd -----	-----	-----	-----	-----	-----	-----
Trigg -----	260 00	335 00	-----	-----	-----	-----
Trimble -----	550 00	550 00	-----	-----	-----	-----
Union -----	1,080 00	1,080 00	-----	-----	175 00	-----
Warren -----	306 21	369 73	318 50	38 61	-----	50 48
Washington -----	630 00	606 74	80 25	69 86	485 00	561 95
Wayne -----	-----	50 50	-----	-----	-----	482 00
Webster -----	1,050 00	1,130 00	-----	-----	-----	-----
Whitley -----	120 00	600 00	-----	15 00	-----	-----
Wolfe -----	150 00	72 00	-----	500 00	-----	-----
Woodford -----	592 00	436 73	111 00	-----	-----	-----
	\$34,557 84	\$32,977 95	\$17,302 32	\$16,556 13	\$15,933 35	\$19,232 48

848 *Seventeenth Biennial Report Bureau of Agriculture.*

FINANCIAL STATEMENT—Continued.

	MONEY EXPENDED.			
	For Repairing		For Building	
	1905-1906	1906-1907	1905-1906	1906-1907
Adair	-----	-----	-----	-----
Allen	-----	-----	-----	-----
Anderson	-----	20 15	-----	600 00
Ballard	32 55	845 04	-----	1,714 23
Barren	550 00	1,200 00	150 00	-----
Bath	398 70	362 15	384 72	58 00
Bell	-----	-----	-----	-----
Boone	700 00	650 00	-----	-----
Bourbon	48 00	95 10	102 00	695 50
Boyd	397 76	181 59	-----	-----
Boyle	51 56	-----	-----	-----
Bracken	-----	600 00	650 00	-----
Breathitt	-----	-----	-----	-----
Breckenridge	174 62	591 85	618 25	8 25
Bullitt	700 00	200 00	2,500 00	600 00
Butler	-----	500 00	600 00	1,000 00
Caldwell	225 00	171 99	328 00	319 00
Calloway	-----	290 00	-----	-----
Campbell	968 38	677 11	200 00	400 93
Carlisle	-----	-----	-----	141 00
Carroll	1,900 00	2,522 00	-----	-----
Cartter	-----	-----	-----	-----
Casey	32 45	-----	47 70	-----
Christian	1,157 81	178 20	1,142 38	178 20
Clark	990 00	978 00	-----	-----
Clay	-----	485 00	-----	125 00
Clinton	-----	-----	400 00	1,578 00
Crittenden	-----	-----	-----	-----
Cumberland	-----	-----	-----	-----
Davless	1,116 89	846 60	997 33	1,461 60
Edmonson	-----	350 00	-----	540 00
Elliott	875 00	45 70	-----	-----
Estill	-----	-----	-----	-----
Fayette	-----	-----	-----	-----
Fleming	-----	-----	-----	-----
Floyd	-----	300 00	1,500 00	1,650 00
Franklin	-----	30 00	-----	128 00
Fulton	1,196 42	981 70	60 00	-----
Gallatin	867 00	365 70	-----	-----
Garrard	73 53	106 83	-----	-----
Grant	1,000 00	1,000 00	1,500 00	550 00
Graves	1,385 98	2,678 00	-----	-----
Grayson	430 00	600 00	265 00	600 00
Green	265 00	517 00	194 00	-----
Greenup	350 00	750 00	430 00	500 00
Hancock	-----	550 00	390 55	375 47
Hardin	800 00	810 00	400 00	2,000 00
Harlan	-----	300 00	-----	1,000 00
Harrison	397 83	230 00	-----	600 00
Hart	-----	-----	-----	-----
Henderson	1,500 00	1,350 00	-----	1,000 00
Henry	-----	1,000 00	-----	-----
Hickman	389 94	647 62	130 20	28 00
Hopkins	330 00	910 00	300 00	635 00
Jackson	-----	63 50	250 00	462 60
Jefferson	1,176 00	1,586 45	3,386 59	2,421 00
Jessamine	318 91	307 84	-----	-----
Johnson	26 38	300 00	245 00	348 00
Kenton	-----	-----	-----	-----
Knott	-----	-----	-----	-----

Seventeenth Biennial Report Bureau of Agriculture. 849

FINANCIAL STATEMENT—Continued.

	Money Expended.			
	For Repairing		For Building	
	1905-1906	1906-1907	1905-1906	1906-1907
Knox	100 00	1,250 00	1,500 00	1,400 00
Larue	150 00		885 00	
Laurel				
Lawrence	109 05	165 00	10 00	278 00
Lee	193 50	200 00	1,560 00	900 00
Leslie				
Letcher	87 00		428 00	
Lewis	776 50	839 97	364 29	196 65
Lincoln				
Livingston		300 00		600 00
Logan	470 00	200 00	560 00	2,367 00
Lyon	310 00		360 00	
Madison		700 00		900 00
Magoffin				
Marion				
Marshall	1,250 00		4,000 00	
Martin	200 00	200 00		500 00
Mason	600 00	250 00		
McCracken	206 40			
McLean	850 00			500 00
Meade	125 00	100 00		500 00
Menefee		288 00		1,010 00
Mercer				
Metcalfe		70 97		
Monroe	150 00		75 00	100 00
Montgomery	243 50	145 00		145 00
Morgan	150 00	1,257 00	73 60	344 00
Muhlenberg	200 00	800 00	1,000 00	
Nelson	50 00	80 00	500 00	1,140 00
Nicholas	260 85	2,982 00		
Ohio		650 00		800 00
Oldham		400 00		800 00
Owen				
Owsley	292 76	460 00	248 72	60 00
Pendleton				
Perry		175 00		540 00
Pike	225 00	85 40	1,418 00	111 17
Powell				
Pulaski	500 00		300 00	
Robertson	85 00			
Rockcastle		100 00		700 00
Rowan		4,862 00		312 54
Russell	3 30	7 60	139 19	395 00
Scott	278 00	669 00	142 00	612 00
Shelby	66 00	138 00	735 00	998 00
Simpson		150 00		5 00
Spencer				
Taylor		120 00		125 00
Todd				
Trigg	260 00	275 00	1,010 00	1,025 00
Trimble	80 00		100 00	
Union		1,750 00	600 00	600 00
Warren	572 00	946 00		1,246 00
Washington	360 00	570 00		
Wayne				
Webster	1,000 00		1,400 00	
Whitley	600 00	1,189 00	580 00	500 00
Wolfe	90 00	50 00	230 00	800 00
Woodford	283 00	273 00	111 00	61 00
	\$31,352 38	51,373 91	32,551 52	43,180 16

850 *Seventeenth Biennial Report Bureau of Agriculture.*

FINANCIAL STATEMENT—Continued.

	Money Expended for Furniture and Apparatus.	
	1906-1907	1905-1906
Adair	-----	-----
Allen	-----	-----
Anderson	-----	\$330 00
Ballard	-----	-----
Barren	-----	-----
Bath	89 35	20 80
Bell	-----	-----
Boone	-----	-----
Bourbon	12 56	2 75
Boyd	-----	-----
Boyle	-----	-----
Bracken	-----	-----
Breathitt	-----	-----
Breckinridge	28 35	25 00
Bullitt	30 00	100 00
Butler	-----	-----
Caldwell	-----	133 77
Calloway	-----	-----
Campbell	160 20	55 52
Carlisle	-----	-----
Carroll	-----	-----
Carter	-----	-----
Casey	-----	-----
Christian	489 17	172 24
Clark	-----	-----
Clay	-----	-----
Clinton	-----	-----
Crittenden	-----	-----
Cumberland	-----	-----
Davless	64 69	78 86
Edmonson	-----	-----
Elliott	-----	15 00
Estill	-----	-----
Fayette	-----	-----
Fleming	-----	-----
Floyd	-----	-----
Franklin	-----	50 00
Fulton	145 69	54 61
Gallatin	-----	6 00
Garrard	1 09	26 55
Grant	250 00	-----
Graves	54 78	149 32
Grayson	-----	-----
Green	-----	-----
Greenup	70 00	48 00
Hancock	-----	-----
Hardin	26 00	40 00
Harlan	-----	-----
Harrison	6 06	-----
Hart	-----	-----
Henderson	-----	-----
Henry	-----	11 60
Hickman	11 60	253 59
Hopkins	13 00	13 00
Jackson	-----	-----
Jefferson	92 15	27 41
Jessamine	-----	-----
Johnson	-----	10 00
Kenton	-----	-----
Knott	-----	-----

Seventeenth Biennial Report Bureau of Agriculture. 851

FINANCIAL STATEMENT—Continued.

	Money Expended for Furniture and Apparatus.	
	1905-1906	1906-1907
Knox -----	50 00	125 00
Larue -----	-----	-----
Laurel -----	-----	-----
Lawrence -----	-----	-----
Lee -----	-----	-----
Leslie -----	-----	-----
Letcher -----	49 75	13 97
Lewis -----	4 50	50
Lincoln -----	-----	-----
Livingston -----	-----	-----
Logan -----	6 00	6 00
Lyon -----	15 00	-----
Madison -----	-----	-----
Magoffin -----	-----	-----
Marion -----	-----	-----
Marshall -----	-----	-----
Martin -----	-----	-----
Mason -----	-----	-----
McCracken -----	10 50	-----
McLean -----	-----	58 00
Meade -----	-----	25 00
Menefee -----	-----	-----
Mercer -----	-----	-----
Metcalfe -----	-----	-----
Monroe -----	-----	-----
Montgomery -----	20 50	-----
Morgan -----	48 00	-----
Muhlenberg -----	-----	100 00
Nelson -----	-----	90 00
Nicholas -----	84 55	-----
Ohio -----	-----	100 00
Oldham -----	-----	-----
Owen -----	-----	-----
Owsley -----	-----	27 00
Pendleton -----	-----	-----
Perry -----	-----	-----
Pike -----	10 00	27 50
Powell -----	-----	-----
Pulaski -----	-----	-----
Robertson -----	-----	-----
Rockcastle -----	-----	200 00
Rowan -----	-----	-----
Russell -----	8 70	20
Scott -----	-----	-----
Shelby -----	40 00	-----
Simpson -----	-----	-----
Spencer -----	-----	-----
Taylor -----	-----	-----
Todd -----	-----	-----
Trigg -----	-----	-----
Trimble -----	-----	-----
Union -----	-----	-----
Warren -----	-----	-----
Washington -----	-----	20 56
Wayne -----	-----	-----
Webster -----	-----	-----
Whitley -----	-----	160 00
Wolfe -----	2 00	75 00
Woodford -----	-----	20 50
	\$2,935 28	\$4,864 45

852 *Seventeenth Biennial Report Bureau of Agriculture.*

FINANCIAL STATEMENT—Continued.

	Salary of County Superintendent.	
	1906-1907	1905-1906
Adair -----	\$ 700 00	\$ 575 00
Allen -----	500 00	500 00
Anderson -----	500 00	500 00
Ballard -----	-----	840 00
Barren -----	750 00	1,000 00
Bath -----	750 00	750 00
Bell -----	800 00	1,200 00
Boone -----	500 00	500 00
Bourbon -----	900 00	1,000 00
Boyd -----	900 00	900 00
Boyle -----	700 00	700 00
Bracken -----	750 00	750 00
Breathitt -----	820 00	800 00
Breckinridge -----	889 46	884 74
Bullitt -----	400 00	400 00
Butler -----	700 00	700 00
Caldwell -----	650 00	650 00
Calloway -----	-----	817 00
Campbell -----	886 00	843 60
Carlisle -----	490 00	490 00
Carroll -----	450 00	450 00
Carter -----	900 00	900 00
Casey -----	880 34	915 00
Christian -----	1,500 00	1,500 00
Clark -----	630 00	630 00
Clay -----	-----	652 00
Clinton -----	400 00	400 00
Crittenden -----	-----	-----
Cumberland -----	-----	-----
Davless -----	1,500 00	1,500 00
Edmonson -----	-----	450 12
Elliott -----	500 00	525 00
Estill -----	432 00	550 00
Fayette -----	1,625 00	1,550 00
Fleming -----	655 00	655 00
Floyd -----	952 00	1,000 00
Franklin -----	600 00	600 00
Fulton -----	682 67	682 00
Gallatin -----	400 00	400 00
Garrard -----	665 00	665 00
Grant -----	850 00	800 00
Graves -----	1,150 00	1,150 00
Grayson -----	725 00	750 09
Green -----	620 00	620 00
Greenup -----	650 00	600 00
Hancock -----	437 50	450 00
Hardin -----	875 00	875 00
Harlan -----	700 00	700 00
Harrison -----	800 00	800 00
Hart -----	800 00	800 00
Henderson -----	1,500 00	1,500 00
Henry -----	-----	720 00
Hickman -----	700 00	700 00
Hopkins -----	1,050 40	1,050 00
Jackson -----	500 00	500 00
Jefferson -----	1,500 00	1,500 00
Jessamine -----	750 00	750 00
Johnson -----	600 00	700 00
Kenton -----	499 98	1,000 00
Knott -----	500 00	600 00

Seventeenth Biennial Report Bureau of Agriculture. 858

FINANCIAL STATEMENT—Continued.

	Salary of County Superintendent.	
	1905-1906	1906-1907
x -----	\$800 00	\$800 00
ue -----		452 80
rel -----	750 00	750 00
.. rence -----	800 00	800 00
ee -----	500 00	790 00
Leslie -----	450 00	600 00
Letcher -----		500 00
Lewis -----	750 00	750 00
Lincoln -----	800 00	800 00
Livingston -----	550 00	550 00
Logan -----	900 00	900 00
Lyon -----	510 00	510 00
Madison -----	1,000 00	1,000 00
Magoffin -----		525 00
Marion -----	753 44	702 00
Marshall -----	625 00	625 00
Martin -----	400 00	455 00
Mason -----	1,000 00	1,000 00
McCracken -----	800 00	800 00
McLean -----	750 00	765 00
Meade -----	555 00	555 00
Menefee -----	400 00	440 00
Mercer -----		
Metcalfe -----	500 00	500 00
Menroe -----	557 00	560 00
Montgomery -----		700 00
Morgan -----		651 00
Muhlenberg -----	800 00	800 00
Nelson -----	800 00	800 00
Nicholas -----	445 00	444 82
Ohio -----	800 00	1,000 00
Oldham -----	400 00	450 00
Owen -----		950 00
Owsley -----	400 00	400 00
Pendleton -----	700 00	700 00
Perry -----	500 00	766 40
Pike -----	1,500 00	1,500 00
Powell -----	499 80	504 20
Pulaski -----	958 68	1,039 20
Robertson -----	450 00	
Rockcastle -----		600 00
Rowan -----		519 29
Russell -----	450 00	450 00
Scott -----	715 00	715 00
Shelby -----	700 00	800 00
Simpson -----	525 00	500 00
Spencer -----	400 00	400 00
Taylor -----		500 00
Todd -----		753 00
Trigg -----	656 12	649 12
Trimble -----	400 00	400 00
Union -----	1,190 00	1,176 30
Warren -----	1,100 00	1,100 00
Washington -----	696 00	687 25
Wayne -----		658 00
Webster -----	850 00	850 00
Whitley -----	1,000 00	1,144 00
Wolfe -----	450 00	450 00
Woodford -----	500 00	500 00
Average -----	\$719 00 1	\$808 50

INDEX.

Agriculture, Department of	1
Alfalfa on the Hill Lands	128
Animals, Economical Feeding of	137
APPENDIX:	
List of Trees and Shrubs Noted in the Region.....	118
Apple and Pear, Blight of	244
Apple Orchard Pests	244
APPLES:	
Bitter Rot of	247
Brown and Black Rot	249
Scab	250
Apple Trees, Result of Spraying Before and After Blooming.....	186
Bulletin for 1908, Farmers' Institute	4
Cherry	259
CITIES, SKETCHES OF LEADING:	
Ashland	643
Bellevue	646
Carrollton	648
Covington	650
Cynthiana	652
Danville	654
Dayton	656
Frankfort	657
Georgetown	660
Harrodsburg	662
Hopkinsville	663
Lexington	664
Ludlow	670
Maysville	671
Middlesborough	673
Mt. Sterling	675
Owensboro	677
Paducah	678

Pineville	682
Princeton	684
Richmond	685
Russellville	687
Somerset	688
Versailles	690
Winchester	692
Classification, Ownership and Valuation of Land	43
Codling Moth	202
CONCENTRATED COMMERCIAL FEEDING STUFFS:	
Circular Regarding	147
Points Concerning	145
Corn Root-Worms	231
COUNTIES OF KENTUCKY, SKETCHES OF:	
Adair	336
Allen	340
Anderson	341
Ballard	345
Barren	347
Bath	350
Bell	353
Boone	355
Bourbon	357
Boyd	359
Boyle	362
Bracken	364
Breathitt	366
Breckinridge	368
Bullitt	372
Butler	376
Caldwell	379
Calloway	381
Campbell	383
Carlisle	385
Carroll	388
Carter	391
Casey	394
Christian	397
Clark	399

Clay	403
Clinton	405
Crittenden	407
Cumberland	409
Daviess	412
Edmonson	416
Elliott	418
Estill	419
Fayette	421
Fleming	428
Floyd	429
Franklin	430
Fulton	434
Gallatin	436
Garrard	438
Grant	440
Graves	443
Grayson	445
Green	448
Greenup	451
Hancock	453
Hardin	455
Harlan	457
Harrison	460
Hart	462
Henderson	467
Henry	469
Hickman	472
Hopkins	475
Jackson	478
Jefferson	481
Jessamine	484
Johnson	486
Kenton	488
Knott	491
Knox	492
Larue	495
Laurel	497
Lawrence	499

Lee	503
Leslie	506
Letcher	507
Lewis	510
Lincoln	514
Livingston	517
Logan	519
Lyon	521
Madison	525
Magoffin	529
Marion	530
Marshall	534
Martin	537
Mason	540
McCracken	542
McLean	547
Meade	550
Menifee	551
Mercer	552
Metcalf	556
Monroe	557
Montgomery	560
Morgan	563
Muhlenberg	565
Nelson	567
Nicholas	569
Ohio	570
Oldham	572
Owen	574
Owsley	576
Pendleton	578
Perry	584
Pike	585
Powell	588
Pulaski	589
Robertson	592
Rockcastle	594
Rowan	596
Russell	598

Scott	601
Shelby	604
Simpson	606
Spencer	608
Taylor	610
Todd	612
Trigg	615
Trimble	617
Union	621
Warren	623
Washington	626
Wayne	630
Webster	632
Whitley	635
Wolfe	638
Woodford	640
Country Lawn, Treatment of	255
Dark Tobacco	168
Districts, Institute	18
Economical Feeding of Animals	137
Farmers' Clubs Organized by Commissioner of Agriculture, Secretaries of	33
Farmers' Institute Workers, Officers and Committees of	29
FARMERS' INSTITUTES:	
Alphabetically Arranged by Counties	15
Bulletins for 1908	4
Division of	4
Duties of Secretaries	5
In the U. S. and Canada, Officers in Charge	30
Organization	6
Program	5
Report of Organization	6
Statement of	23
Farmers' Organization, Department of	1
Fire Protection	110
FOOD:	
Of Crow Blackbird	216
Of Quiscalus Quiscula	220
FORESTS OF KENTUCKY:	
Condition by Counties	75

Description of Species	59
Descriptions	56
Management	58
Present Stand	47
Formulæ for Insecticides and Fungicides for Use in an Apple Orchard.....	208
Ginseng, The Culture of.....	166
Hemp Growing in Kentucky	122
Hogs and Steers for Market, Facts and Fattening.....	151
Horticultural Society, Proceedings and Annual Conventions of.....	237
Insect and Other Enemies in the Orchard	213
Institute Districts	18
Institute Workers, Officers and Committees of	29
INSTITUTES, FARMERS':	
Alphabetically Arranged by Counties	15
Bulletins for 1908	4
Division of	4
Duties of Secretaries	5
In the U. S. and Canada, Officers in Charge.....	30
Organization	6
Program	5
Report of Organization	6
Statement of	23
Introduction	41
KENTUCKY:	
Agricultural Wealth	708
Boundaries and Area	697
Climate	705
Drainage	702
Introduction	696
Manufacturing	709
Mineral Wealth	705
Natural Curiosities	703
Physical Features (Surface)	699
Vegetation and Animals	709
LAWS OF KENTUCKY:	
Abstracts as Applied to Farmers	315
Agriculture, Forestry and Immigration Act.....	276
Agriculture, Labor and Statistics	272
Creating State Board of	276

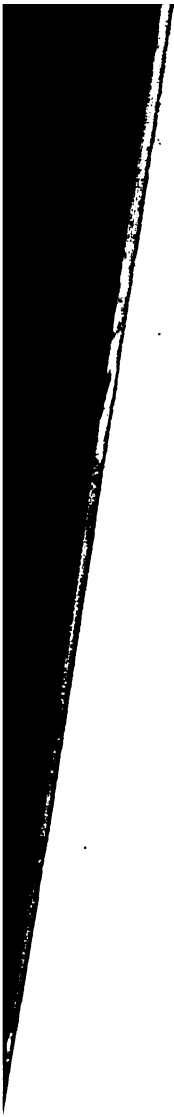
Agriculture, Regulating State Department of	272
Animals	316
Arbitration and Award	317
Assignments	317
Bankers, Private	323
Banks	323
Barbering	318
Birds and Game	329
Blind, Institute for	320
Boats	318
Bonds	318
Canada Thistles	318
Cemetery Companies	319
Charitable Institutions	319, 324
Charitable Uses and Religious Societies	320
Child Labor	306
Children Destitute or Maltreated	320
Children's Home Society	321
Citizens, Expatriation and Aliens	322
Compulsory Education	322
Confederate Home	322
Conveyances	322
Corporations	323
Costs	324
Courts of Justice	325
Currency	326
Deaf Mutes, Institute for	320
Descent and Distribution	326
Dogs	317
Drifts, Logs, Timber	327
Fast Riding or Driving	310
Felonies	325
Fences	327, 328
Fish	325
Game	302
Game and Birds	329
Homesteads	327
Inspection	329
Institutions, Charitable	319, 324

Insurance Companies	323
Interest and Usury	330
Labor Inspector	312
Lands	327, 330
Landlord and Tenant	330
Levees	307, 324
Liberty of Conscience	322
License, Vehicle	309
Limitations of Actions	331
Mechanics' and Material Lien	330
Offences Against Public Health.....	320
Orchards, Game Reserves, &c., Protection of.....	306
Other Offences	326
Personal Representative	331
Powers Over Real Estate and Public Lands.....	324
Property Rights	329
Provisions in Kentucky Game Law.....	304
Public Roads	331
Railroad Companies	323
Roads and Passways	325
Religious Societies	320
Schools	331
State Fairs	332
Timber, Drifts, Logs	327
Trees	328
Trust Companies	323
Warehouses	333
When and Where Unlawful to Employ	321
Wills	334
LECTURERS:	
Employed by State Board of Agriculture, Forestry and Immigration....	7
Special	7
Institute	8
Legal Weights and Measures	710
Lime in the Soil, The Use of.....	131
Mutual Benefit that Should Exist Between the Agricultural Commission and the Horticultural Society.....	266
Nursery Outlook in Kentucky.....	238
Orchards, How to Plant and Care for.....	211
Organizations, Farmers' Department of.....	1

OTHER INDUSTRIES DEPENDENT ON THE FORESTS:

Agriculture	107
Mining	108
Ownership, Classification and Valuation of Land.....	43
Peaches, How We Grow in Trimble County.....	263
Pear and Apple, Blight of	244
Physiographic Features	42
Planting	114
Protection from Stock.....	112
Recommendations	116
Report of Acting Assistant Forester.....	182
Seeding to Wheat	124
Sheep in Eastern Kentucky	160
Small Fruits, The Growing of.....	257
Spraying Apple Trees Before and After Blooming, Results of.....	186
State Fair	268, 271
Statistical Tables, Report of Board of Equalization.....	711
Steers and Hogs for Market, Facts in Fattening.....	151
Swine Husbandry, Some Points in.....	154
Table Showing Results of Spraying.....	193
Taxation	115
The Farm Boy	164
TIMBER INDUSTRIES:	
Hewn Ties	96
Lumbering	91
Other Forest Industries	102
Stave Industry	98
Summary	104
Timber Supply	121
Tobacco, Dark	168
Transportation	45
Valuation, Ownership and Classification of Land.....	43
Wild Fruits of Kentucky	252

SEP 3 1919



10

